GAS JOURNAL, FEB. 16, 1938

VOL. 221. 90th YEAR. No. 3900.

Editorial Notes

The B.I.F.

NEXT Monday will see the opening of the British Industries Fair, and at the Birmingham Section at Castle Bromwich the Gas Industry, with its co-ordinated display, made the more effective by the uniform colour scheme which has been a happy feature of recent years, will make a brave and impressive showing. Centrally positioned in the huge Fair Building, the Gas Section will comprise exhibits covering 32,000 sq.ft. of stand space—double the space taken when, in 1928, the first effort at a comprehensive co-ordinated exhibit was made. Since 1928 the displays have been increasingly effective, and by 1934 the stands of the Gas Section occupied 27,000 sq.ft. It will be recalled that in 1935, as an experiment which in the event did not prove a success, the Fair Authorities decided to hold the Fair at Birmingham in May, and that year the Gas Industry, considering the time unsuitable, did not participate. Reversion to the usual date, however, was coincident with a return of the Gas Industry's support on a more extensive scale.

The 1938 Gas Section will, we are sure, be an admirable illustration of the strength of the Industry and its organization for service. Those who visit Castle Bromwich during the run of the Fair, which will continue till March 4, and who include architects and builders, heating and ventilating engineers, lighting experts, as well as the general public, will be able to see how essentially modern our Industry is, how well equipped it is to serve the needs of home and industry. They will be impressed by the design, finish, and variety of the gas appliances of to-day, and with the automaticity of every form of gas service—heating, cooking, water heating, and lighting. Industrialists will certainly find of the greatest interest and help the exhibit organized by the British Gas Federation. This comprehensive industrial exhibit, the outcome of collaboration between our Industry and furnace and industrial equipment manufacturers, will demonstrate in vivid manner the progress the Gas Industry has made in catering for the exacting requirements of modern industry.

The telling display of the Industry's activities in its many spheres such as the Gas Section will prove to be will have high prestige value; and we regard it as the duty of the Industry's personnel to reward with a full measure of support the efforts of the British Gas Federation and of the manufacturers of gas plant and appliances who will be demonstrating at Castle Bromwich what is meant by modern gas service in the home, in industry, and in the field of public lighting. The customary Joint Gas Conference of the B.G.F. arranged in connexion with the Fair is to take place during the second week, from March 1 to March 3. The programme for this is a light one; and this is all to the good, for it will allow of ample opportunity for those attending to inspect the exhibits and enjoy that informal interchange of views and experiences which can be so helpful and which is a feature of all gatherings of our Industry's personnel. What we may term the two business items on the programme are the Presidential Address of the Earl of Dudley and an Address by Sir Philip Dawson on smoke prevention, a subject the importance of which is becoming increasingly realized. Then there are the visits next week of the Joint Junior Gas Associations and of Gas Salesmen. We look to record attendances at these meetings.

For those who intend to visit the Fair, as also for the less fortunate who are unable to do so, the Special Supplement included in the "JOURNAL" to-day will prove of value. The Supplement is an illustrated account of the exhibits which will be staged in the Gas Section and of displays of direct interest to our Industry in other Sections of the Fair. Also, the value of our issue to-day is enhanced by the announcements of manufacturers of plant and appliances in our advertisement pages—announcements displayed in a manner in keeping with what will be the effectiveness of the exhibits at the Fair.

Competition from Coal

THE Coal Utilisation Council, the Combustion (until recently "Coal-burning") Appliance Makers' Association (Solid Fuel), and the Coal-burning Appliances Joint Consultative Board—a voluntary body created by several organizations interested in the sale of coal and coal-burning appliances—are increasing their efforts to encourage the public to burn more raw coal. We have it stated in a recent Paper at a conference of sales and publicity managers for coal-burning appliances that assurances have been received that the colliery owners will contribute substantial funds and that the C.A.M.A. has decided to convert its small research department into a separate organization for research into the utilization of coal, which is to be called the British Coal Utilisation Research Association. This new research organi-

zation, we learn, is installing test shops and laboratories in the London area, where appliances can be systematically tested with different kinds of fuel, and, if satisfactory, given a seal and certificate of approval. Research is in progress with a view to making domestic appliances more efficient and labour saving, and special attention is being paid to more convenient lighting of fires, ash removal, smoke abatement, and continuous burning. This research is to be greatly extended in future with the increased funds now available.

There can be no doubt, stated the Authors (Mr. D. E. Havinden and Mr. N. de G. Fortman) in the Paper to which we have referred, that the relative consumption of the competitive fuels is intimately and directly connected with the character and convenience of the appliances in which they are burned; and they went on to point out that "the coal-fired cooker is now scarcely ever found in many classes of dwelling." This, of course, is not in the least surprising, and we suggest that the Authors are optimistic if they think that any volume of research on coal-fired cookers will result in the displacement of gas equipment by cookers burning raw coal. The gas cooker, as are other gas appliances, is constantly undergoing improvement, and more and more people every week are enjoying the cleanliness, convenience, and automatic operation of the gas cooker, which in these days is a delight to the eye of the most fastidious housewife; moreover, it combines all these qualities with economy.

However, the advantages of gas over coal need not be stressed in these columns. It is well to bear in mind, though, that competition from raw coal is not likely to decrease as a result of the efforts which are being put forward, late in the day as they are, by the coal interests. It is obvious that they are making a move not only in research on appliances, but in collective propaganda and advertising, and are busy formulating plans for market research, training of engineering and selling staff, and after-sales service. All avenues are, in fact, being explored which may appear likely to extend the burning of raw coal domestically and industrially. Mention is made in the Paper of a scheme of hire purchase and deferred payments which the Coal Burning Appliances Joint Consultative Board has brought into operation in conjunction with United Dominions Trust, Ltd. Features of the scheme are that the dealer receives the total cash price of a coal-burning appliance when the transaction is completed, that the consumer may spread the cost over a suitable period of time, and that each transaction is personal between dealer and his customer. An after-sales service is provided, an insurance fund is to be created to protect the dealer against losses, and a service fund is to be created to assist him in cases where circumstances over which he has no control have given rise to complaint regarding any equipment sold. It is suggested that service depôts should be established throughout the country. No longer will the consumer have to buy his coal-burning equipment outright; and the Gas Industry well knows the attraction of this method of purchase.

Mr. Havinden and Mr. Fortman had also something to say about showrooms and exhibitions. Having pointed out that there is hardly a town of any size in Great Britain without its gas and electricity showrooms, they explained that a concerted effort is being made by the coal interests for the establishment of showrooms in every town and the organization of stands at the principal exhibitions. They stated that, as a result of the activities of the C.U.C., the C.A.M.A., and the J.C.B., a definite showroom policy has been developed and a comprehensive programme planned for 1938. The most spectacular item of this programme is the organization, for the Empire Exhibition to be held in Glasgow from May to October, of an imposing pavilion exhibiting the use of coal in home and industry.

The foregoing gives some idea of the steps the coal industry is taking in its endeavours to increase the consumption of raw coal. The Gas Industry has the advantage of a superior fuel, superior equipment, and superior sales and service organization. It is, however, as we have emphasized time and again, catering for a mass market; and this makes it necessary that we should look at the whole question of competition from the all-in fuel cost and offer gas for additional use at prices competitive with the costs of using raw coal. This means a two-part or other attractive tariff; and gas sold on such terms is replacing coal in the mining areas themselves.

Lumens per Cubic Foot

It will be recalled that at the Annual Conference of the Association of Public Lighting Engineers held at Folkestone last September Mr. W. J. Jones, of the Lighting Service Bureau of the Electric Lamp Manufacturers' Association, launched an attack on the Gas Industry's figures in regard to the performance of high-pressure lamps. He said he had tried to obtain some information regarding the total light emission from high-pressure gas burners, but it had been impossible to obtain that information. He had therefore sent a high-pressure gas lantern to the National Physical Laboratory for test, when it was found that the light output from the lamp was 216 lumens per cu.ft. Having quoted this figure, he concluded his remarks by observing complacently that this would "complete this important session on high-pressure gas."

Now the figures quoted by Mr. Jones were just about two-thirds of those which the Gas Industry has been obtaining for ten years, and their accuracy was naturally challenged at the Conference; and an invitation was publicly issued to Mr. Jones to visit the Watson House Laboratories of the Gas Light and Coke Company and measure for himself the performance of the lamps to which reference had been made, and the then President of the Association, who rightly deprecated the use of the A.P.L.E. platform by Mr. Jones to disparage a rival illuminant, suggested that, if Mr. Jones accepted the invitation, then the results of the tests should be published. In the event, Mr. Jones did agree with the Gas Light and Coke Company to the carrying out of further tests by the National Physical Laboratory, and the results of these tests are given in a statement, signed by himself and Mr. K. F. Sawyer, which we publish in our issue to-day.

In this statement Mr. Jones admits that he had overlooked published data relative to the light output of high-pressure gas lanterns presented to the A.P.L.E. in 1932, and that he did not realize that the lamp to which he referred last September was of most exceptional size and seldom used. Tests were carried out at the N.P.L. on a 1-light high-pressure gas lamp working under as normal conditions as could be reproduced in the laboratory, and the results indicated a light output of 327 lumens per cu.ft. of 500 B.Th.U. gas per hour—a figure within 6% of that claimed at the A.P.L.E. Conference, which is within the margin of testing error. This N.P.L. test will, we imagine, make Mr. Jones a little less anxious to disparage at a public meeting figures put forward in good faith and with solid backing by the Gas Industry, and the whole affair will perhaps impress upon him the desirability of paying more attention to figures relating to

gas which are presented from time to time to the Association at the conferences in which he takes part.

We may add that in practice the efficacy of a street lighting installation depends not on the initial luminous output of the lantern, but on the average luminous output throughout the life of the source. This point was emphasized by the Ministry of Transport Departmental Committee on Street Lighting in their Final Report, and in this respect gas has everything in its favour. With economic maintenance its output is practically constant—so much so, in fact, that many gas undertakings undertake to maintain the lighting efficiency of an installation within 25% of the initial value, and in recent contracts have even accepted a contract obligation on a basis of 20% variation. Moreover, the actual light sources—the mantles—are relatively inexpensive to replace, so that their renewal when necessary is economic; and they show no marked falling off in light output over the whole of their working life.

Social Conditions To-Day

THERE were a number of points deserving of careful consideration in the Address to the annual meeting of proprietors of Mr. Frank H. Jones, dealing with his first year of Presidency of the South Metropolitan Gas Company, but we were especially struck by two of them. In the first place, there was his repeated avowal of complete confidence in the future of the Gas Industry. It was, as a matter of fact, our own confidence—our undiminished confidence—in this future which was responsible for the penning of the paragraph headed "Gas Companies and Publicity" which appeared in the "JOURNAL" a fortnight ago. This paragraph drew attention to the number of full reports of meetings of the more important gas companies that would be published shortly in our pages, and in connexion with such reports the remark was made that "they will perform a valuable public service if they induce many more small investors to seek the safety of the Gas Industry for their savings."

This is an aspect of the subject which we feel most strongly should never for a moment be out of the minds of gas administrators. During recent months the newspapers have printed details of unbelievably large sums lost by investors who had been dazzled by the promise of rich reward. "Unbelievably" is, perhaps, not quite the right word to use, because the figures were substantiated in the penetrating atmosphere of the Criminal Courts; otherwise they certainly would have been incredible. In the great majority of cases, the victims must be people who cannot afford to risk their capital—those who can afford to do so have not the same incentive—and there is in this fact an additional reason for regarding it as a solemn public duty for those who have the power to do all they can to prevent these small capitalists from going astray. At long last the powerful arm of the law has been stretched out, and the bitter experiences of individuals have been broadcasted for the benefit of the many.

This is a development of prime importance, but the point we are striving to make is that, while the law is endeavouring to deter the wrongdoers, gas administrators can fill perhaps an equally weighty part by presenting to small investors far and wide an alternative channel for their savings—a channel in which the safety of both principal and interest is assured. The meetings of the two largest of the three Metropolitan Gas Companies—fully reported in last week's and to-day's issues of the "JOURNAL"—constitute the best imaginable form of propaganda, and the widespread publicity given to them brings the facts to the notice of all sorts and conditions of men. This is the kind of effort we desire to see emulated by gas companies in all parts of the country; for, to speak colloquially, they can "deliver the goods." Glancing over such reports as have been received so far of the past year's operations of gas companies, and the accompanying accounts, we are led to the conclusion that ere long there will be further opportunities for investment in gas stocks, so that the policy we are advocating may be regarded as particularly relevant at this juncture.

The second point in Mr. Frank Jones's South Metropolitan Address by which we were especially struck had reference to social conditions to-day. While recognizing as a fact that at present the old form of homely amusement is being displaced by motor-cars and entertainment in cinema, restaurant, &c., Mr. Frank Jones went on: "I am one of those who think that, with the greater comfort that is being offered in the new houses, and with the amenities that will be increasingly provided, the home will again come into its own as the natural meeting place of family and friends." This is a reflection that cheers us, and we find in more than one direction reason for regarding it as based upon sound deductions. And if the home should again come into its own in this way, the Gas Industry will have done its share towards so desirable a consummation. Good gas apparatus can go far in making a comfortable home, and the greater efficiency of modern types brings their use well within the reach of those of most modest means. Again, as the President pointed out, there is also a greater saving than the increased efficiency of the appliance itself—for old methods have been displaced by new. "For instance, it takes far less gas, as well as much less time, to draw hot water from one of the latest instantaneous water-heaters than it does to heat water over a gas-ring." These considerations, though responsible for a temporary reduction in consumption, point to ultimate gain to the gas undertaking, in addition to their influence in "popularizing" the home.

And there is another thing. Modern methods not only make it practicable for almost everybody to use the newest types of apparatus, but they also bring appliances of this character within the reach of all the consumers. Hire-purchase is the means. Now, with regard to hire-purchase there are two schools of thought, and neither school is without tangible evidence with which to support its views; but though there may be examples of harsh treatment in unforeseen circumstances, it is even easier to find cases in which this method of acquiring needed articles has proved a blessing. In any case, hire-purchase, conducted upon a fair and equitable basis, as is the procedure in the Gas Industry, and having relation to articles that offer a substantial contribution towards making life worth living, has not only come to stay, but is growing rapidly. The gas company accounts now coming to hand make this fact abundantly clear. In the case of many large undertakings, the practice is increasing by leaps and bounds, and to numberless consumers it has brought helpful gas-consuming appliances that they would otherwise have had to do without. Thus it is impossible for us to do other than welcome the innovation—for upon the scale that it is being practised to-day it is an innovation.

We have dealt here with only two points from Mr. Frank Jones's Address. Among others that might have been enlarged upon is the Company's high consumption per consumer, both ordinary and prepayment. Then there is the fact that sales of gas for industry have made further advance, and are now just over 11% of the Company's output; while

the quantity of gas sold for public lighting last year was nearly 5% greater than in 1936. We may be justified, therefore, in regarding the reduction of 3·84% in the total quantity of gas sold as being merely a temporary falling off.

365—

A COOKER for every day of the year. This is the name which Radiation Limited have given to their latest introduction; and we would particularly draw attention to the illustrated technical description of it in other pages of this issue.

In recent weeks we have devoted considerable space in these notes to an examination of various aspects of the cooking load, stressing particularly the urgent need to replace, as far as possible, every out-of-date cooker on the district. At this juncture, excellent as their own and other makers' existing appliances are, the introduction by Radiation Limited of a type of cooker different from any they have previously put out is most opportune. The Industry will, we know, examine it with a critical eye, and we have little doubt it will be found good; the "New World" reputation has been built up only by intensive research work extending over many years, and by subjecting these appliances to the most searching tests before they are deemed ready for the market. But whatever the verdict may be, we are now considering the matter from another aspect. Interest in cooking and in cookers will be stimulated by the arrival of the *de luxe* "365" as well as two other "standard household" models, and for this reason, if for no other, we should give them a hearty welcome.

We do not propose in this place to discuss technical details; they are described and illustrated elsewhere, and in any case the majority of our readers will have the opportunity of seeing the appliances in the life at Castle Bromwich. But we have had the privilege of a preview in the Radiation laboratories where "365" has been through its trials, and we were able to pull it thoroughly to pieces. We use this expression in its literal meaning, because what appealed to us as much as anything was the ease with which even an uninstructed person can take out the hotplate parts, and, if you will, swill the comparatively few parts under a hot tap. In the burners which will not light back we believe Radiation are the first to reach a goal towards which many inventors have striven for many years. Positive ignition by pilot flame brings any hotplate burner into immediate action at the touch of a patent safety tap, and the oven burner is lighted from a touch-spot just inside the door without the need to reach right to the back. Quick boiling hotplate burners "rub in" one of the main advantages which indisputably belong to gas cooking, and the makers assure us that the oven design—bottom-lagged as well as everywhere else—renders easy even better cooking than they have ever before offered to the housewife.

Since we have referred specifically to the *de luxe* cooker in the new series, it should be emphasized that many of the most appealing features are incorporated in two other models which Radiation are introducing as their standard household cooker. These are also described and illustrated in our article. And if the few points which we have mentioned are mainly of consumer appeal, it is because such considerations, to our mind, are largely those which win the day. Technically, we know, gas holds an unassailable position. But the housewife is not technically minded; she demands good, but carefree, cooking, every modern aid, and an outward appearance which does credit to her home. We leave it to the Gas Industry to judge whether in the new cookers these requirements are combined with technical efficiency in such a way as will provide one more weapon with which to entrench the cooking load.

Freedom of Choice

On a Labour amendment the South Shields Town Council last week threw out a Housing Committee resolution that gas should be installed in the houses of a projected municipal housing estate. Moving the deletion of the resolution, Councillor Newman said that, if gas was installed, then there would be renewed demands for gas for all domestic purposes on that and other estates owned by the Council. This, of course, is precisely what does happen when the tenant is allowed freedom of choice. During the debate one of the members spoke of the despotism of the Town Council—the "repudiation of every principle of freedom;" but such is the grip of electricity on the Council that the amendment was carried by 24 votes to 11. We would remind the South Shields Town Council that the public have an undoubted right to determine for themselves whether they will use electricity or gas, or both. That right of the public has been recognized by Parliament, and it was given prominence by Mr. Justice Farwell in his judgment last year in the action between the Egham and Staines Electricity Company and the Gas Light and Coke Company. The South Shields Council surely cannot regard obstruction to legitimate public demand in the vital matter of fuel supply as being in the public interest.

Progress at Blackpool

In a Paper to the Manchester and District Junior Gas Association—see later pages—Mr. T. V. Blake reviewed the activities of the Blackpool Gas Undertaking during the past six years. In a seaside resort weather conditions, affluence or otherwise of the visitors, advertising, and so on exert their influence on the seasonal demand for gas, which demand it is exceedingly difficult to forecast. Moreover, as the greatest output of gas occurs during the hottest month of the year and the hottest hours of the day, much larger volumes of gas need to be dealt with. Mr. Blake gave graphs which indicate the effects of these influencing factors on the gas output at Blackpool and offer an interesting comparison with the seasonal load of an inland town. It is shown that there are no lengthy periods of the year during which major repairs and renewals can be carried out, thus adding a further peculiarity when comparison is made with the usual procedure at an inland town gas-works.

Killing "Old Man Recession"

Our American cousins can sometimes "show us a thing or two" in publicity ideas. Recently the first pile of the foundations for the £150,000 exhibit building which the United States Gas Industry are erecting at the New York World's Fair, 1939, was driven "as an act of aggression against recession." An emaciated dummy figure of a man supposedly following the speech of Mr. Hugh Cuthrell, the President of Gas Exhibits (Incorporated), who are erecting the building, by arrangement suddenly fell forward from among a small gathering of invited guests. Amid a shout for help an ambulance squad dashed up to the scene. The dummy was cautiously lifted on to a stretcher and, after mock efforts at revival, even a stethoscope failed to detect any signs of life. The public address system of loud speakers in the neighbourhood then broke into Chopin's "Funeral March" and at the same time the dummy was raised to disclose the sign "Old Man Recession." A bugler sounded a fanfare and the dummy was thrust head first into the hole prepared for the first pile. Gaily dressed girls released a ribbon attached to the 90 ft. wooden pile which was duly hammered home by the eight-ton hammer of the pile driver carrying "Old Man Recession" far down into the ground. Daylight fireworks ended the ceremony, including the liberation of three luminous doves of peace. The Gas Industry building at the Fair which is to occupy more than two acres is to contain 30,000 sq.ft. of exhibit space for displays and demonstrations. Features are expected to include a laboratory, a model all-gas house, a theatre, and a club. Four flaming pylons each 90 ft. high, grouped around a 50 ft. gas flame roaring skywards from a cube representing a gas rate of

1,000 cu.ft. per hour is to be arranged in the main entrance court.

The Gas Industry in America

On a later page we publish a statement prepared by the American Gas Association containing some most interesting statistics relating to the Gas Industry in the United States. It will surprise many, for example, to learn that the investment in the Industry exceeds by many millions of dollars the amount of capital employed in the production of steel. More than 135,000 people are employed in the Industry, which now serves 17 million consumers. In regard to the amount of capital employed per worker, for the motor car industry this is approximately $3,000; in the case of steel it is about $7,000; the railroads have an investment of $25,000 for each employee; while the worker in the Gas Industry has behind him an investment of nearly $37,000. In a bulletin issued by the A.G.A. at the beginning of the year—reference to this was made in the "JOURNAL" for Jan. 12—it was stated that the past year and a half has been characterized by an increasing appreciation of the great potential market for domestic water heating. There has been a widespread adoption of rates more favourable to the use of gas for this purpose, and this has been accompanied by a marked acceleration of local sales effort and a nation-wide co-ordinated campaign to promote the use of gas for water heating. So successful have been the results of this programme that it will be continued during the present year. For instance, the sale of automatic gas water heaters in 1937 averaged more than 20% above 1936. In July of last year the American Gas Industry entered the second year of its three-year $1,500,000 national advertising programme. More than 700 undertakings serving in excess of 70% of the gas consumers in the United States are participating in this scheme, and in support of the effort the advertising of many local gas companies and of manufacturers of gas burning equipment has been co-ordinated with the national campaign.

Of the total of 17,022,000 consumers, the largest number ever connected to the mains of the Industry, 9,976,000 were served by the manufactured gas industry, which is a lower total than that of British gas consumers. Sales of manufactured gas in America for domestic uses other than house heating amounted to 195,077 million cu.ft., a decline of 1·6% on the year. On the other hand, house heating sales registered a gain of 9%, doubtless due to the adoption of special tariffs for central heating. Sales of both manufactured and natural gas for industrial and commercial purposes in 1937 averaged about 10% more than in the previous year. It was also mentioned in the A.G.A. bulletin that during 1936 1,464,000 gas cookers were sold, more than equal to the entire number of electric cookers in use at that time. The estimate for cooker sales in 1937 is 1,600,000.

The Gas Poker Load

Eight years ago we expressed astonishment that so few of the general public were at the time aware of the existence of the gas poker-burner. "The consumption of this aid to comfort," we said, "may be small, but that does not matter; the point to remember is that it opens the door to the more universal employment of smokeless gas coke both for water heating and for room warming, which implies cheaper gas and greater sales. We believe that every consumer who has a gas poker burner is better disposed towards our Industry." Since then developments have taken place in the design of the burner and the plug-in point has been brought into general use. A British Standard Specification for the latter was issued in 1934, and in the "JOURNAL" for Nov. 3 last we gave a description of the latest types of flex plug and socket now available, which show great improvements on earlier designs and are interchangeable with the original pattern. These improvements make the poker burner all the more attractive. "There is no doubt," we remarked in the "JOURNAL" only a week or two ago, "that the gas poker is as potent a salesman for gas as is the all-mains wireless set for electricity. In our view the Industry might do many worse things than undertake a national campaign to sell gas pokers for every solid fuel grate in the country, whether burning coal or coke. A great many people do not yet know that such an appliance exists." We are glad, therefore, to see the present series of Gas Light and Coke Company advertisements—and very effective advertisements they are—in the National Press featuring Mr. Therm with his gas poker coming to the aid of the housewife in yet another way.

Coke Sales Problems Ahead

An article in last week's "JOURNAL"—it was reprinted by permission from the *Iron and Coal Trades Review*—focused attention on the problems which the producer of oven coke will have to face. The total productive capacity of coke ovens, it was pointed out, indicates a surplus production in 1938 over all present market demands of 4 million tons, increasing, as new plant comes into operation, to a maximum of probably 7 million tons in 1939. Pre-supposing increased consumption in the steel industry, there will remain a growing surplus of coke which will require to be absorbed in general markets. The writer mentioned, that in the Yorkshire area more than 80% of the oven coke producers have formed themselves into a Coke Producers' Federation; Yorkshire and Durham have established a Coke Co-ordination Committee; the Notts and Derby coke-oven owners have also formed themselves into an Association; and on the North-East Coast the producers have associated into one body with the gas-coke producers. Any move towards a closer co-ordination of interests within the coke oven industry is a wise one, but in itself it is not sufficient to maintain an economic balance of markets. In addition there must be a closer alliance with the Gas Industry. Something more than price stabilization must be envisaged by the oven coke producers. The coke oven industry cannot afford to fall back on its old system of indiscriminate selling in general markets. There are indications that many problems will present themselves at no distant date. The solution to these problems unquestionably lies in co-ordinated development work in alliance with the Gas Industry.

Forthcoming Engagements

February.

17.—**S.B.G.I.**—Council Meeting at 56, Victoria Street, S.W. 1, 2.30 p.m.
17.—**B.C.G.A.**—Annual Meeting of Members in the Southern District, Gas Industry House, S.W. 1, 2.30 p.m.
18.—**Southern Association (Western District).**—Commercial Meeting, Rougemount Hotel, Exeter, 2.30 p.m.
19.—**Scottish Western Juniors.**—Annual Whist Drive and Dance.
21.—**London and Counties Coke Association.**—Executive Committee, 11.15 a.m.; Central Committee, 2.30 p.m. Both meetings at Gas Industry House.
21.—**L.C.C.A.**—Finance Committee, 10.45 a.m.; Executive Committee, 11.15 a.m.; Central Committee, 2.30 p.m.
22.—**B.C.G.A.**—Annual Meeting of Members in the Manchester District, Manchester, 3 p.m.
23.—**Southern Association (Eastern District).**—Meeting at Gas Industry House. Paper on "Observations on the Heating up of Silica Retort Settings."
24.—**B.C.G.A.**—Annual Meeting of Members in the Eastern District, Cambridge, 2.15 p.m.
26.—**Yorkshire Juniors.**—Meeting at Barnsley. Paper by L. Friedman, of Ascot Gas Water Heaters, Ltd.
26.—**Western Juniors.**—Visit to Bristol. Paper by A. B. Horsfield.

February 21-March 4.

British Industries Fair, Castle Bromwich.

Feb. 24.—Joint Visit of Junior Gas Associations.
Feb. 25.—Joint Visit of B.C.G.A. Salesmen's Circles.
Feb. 28.—Visit of Women's Gas Council.
Mar. 1-3.—Joint Gas Conference.

March.

3.—**Midland Juniors.**—Meeting and Paper by D. J. Ward on "M.A.N." Holder Tar Re-conditioning Plant."
4.—**I.G.E.**—Research Executive Committee, 2.30 p.m.
5.—**Scottish Juniors.**—Joint Meeting at Edinburgh. Paper by Col. W. Carmichael Peebles on "Governors."
5.—**Manchester and District Juniors and Yorkshire Juniors.**—Joint Visit to W. C. Holmes & Co., Ltd., Huddersfield. Paper by E. B Craddock on "Organizing an Industrial Gas Department at Stockport."
7.—**I.G.E.**—Finance Committee, 1.45 p.m.; Membership Committee, 2.15 p.m.; General Purposes Committee, 3 p.m.
8.—**I.G.E.**—Council, 10 a.m.
9.—**I.G.E.**—Board of Examiners, 10.30 a.m.
12.—**Scottish Juniors.**—Joint Visit to Works and Showrooms at Alloa.
14.—**L.C.C.A.**—Technical Committee, 2.30 p.m.
15.—**I.G.E.**—Gas Education Executive Committee, 2.30 p.m.

Personal

After a service of nearly thirty-four years, Mr. W. H. REED has tendered his resignation as Engineer, Manager, and Secretary of the Bridport Gas Company.

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Many members of the Industry will have read accounts in the National Press of the forthcoming assault on Mount Everest. Among the party of experienced climbers is Mr. PETER LLOYD, a Research Chemist with the Gas Light and Coke Company, of whom *The Times* in a recent article wrote: "Lloyd is a first-rate man on rock and ice with very good Alpine experience. In 1936, with the British-American party, he carried a load to the high bivouac at 23,500 ft. on Nanda Devi, and proved to be very much at home on difficult rock and in severe conditions at that height."

Mr. Lloyd is widely known in the Industry as the author of "Theory of Industrial Gas Heating," and actually he is reading the proofs during the journey to India of a revised edition of this book, which we shall shortly be publishing.

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Mr. MATTHEW ANDERSON has been appointed to the post of Director of the Coal Utilisation Council, which was left vacant by the resignation of Mr. W. R. Gordon. Mr. Anderson has had a wide experience of journalism, newspaper management, industrial development work, and industrial publicity. In the course of his work he visited continental countries, Canada and the U.S.A. in the interests of North of England manufacturers and municipalities. It is expected that Mr. Anderson will take up his new duties at the beginning of March.

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Mr. LEONARD HARTLEY, a Director of Messrs. Clayton, Son, & Co., of Leeds, is now practically well again after his recent attack of typhoid fever. He is completing his convalescence on the South Devon Coast, and his many friends in the Gas Industry will be pleased to hear that he hopes to resume his normal business duties in about a week's time.

Obituary

The death has occurred of Mr. ARTHUR JACKSON, a Director of the Sligo Gas Company.

* * *

The death occurred on Feb. 6, at the age of eighty, of Mr. HAROLD BLUNDELL, at his home "Hestercombe," Carlton Road, Harpenden, Herts. Deceased was associated with the Luton Gas Company, of which he was appointed a Director in 1918. He was later elected Deputy-Chairman. His father, Mr. Joseph Blundell, was also associated with the Company and had served as Chairman of the Directors.

* * *

His many friends in the Industry will sympathize with Mr. JAMES CAMPBELL, Engineer and Manager of the Dunfermline Gas Department, on the death of his wife on Jan. 28 after a long illness.

Letter to the Editor

Salaries of Gas Engineers

SIR,—With reference to the correspondence in your issue of Feb. 9, regarding salaries of gas engineers, I do not know who "M. & S. Small Works" is, but I cannot agree with the scale he indicates.

For instance, I consider the suggestion that the salary for a manager of a 200 million works should be £500 per annum is altogether inadequate.

Yours faithfully,
C. S. SHAPLEY,
Engineer and General Manager.

City of Leeds Gas Department.
Leeds, 2,
Feb. 11, 1938.

High-Pressure Gas Tests

Lumen Output of Lamps.

In the course of the discussion on Mr. Keith's Paper at Folkestone during the Association of Public Lighting Engineers' Conference, Mr. Jones, of the Electric Lamp Manufacturers' Association, stated that, having been unable to obtain authoritative figures on high-pressure gas street lamps, he had tests carried out by the National Physical Laboratory, and the results were far below those usually claimed by the Gas Industry.

As a result of this statement being challenged by representatives of the Gas Industry, Mr. Jones co-operated with the makers and the Gas Light and Coke Company in having carried out further tests by the National Physical Laboratory of a more truly representative kind.

Mr. Jones admits that, when he made his statement, he had overlooked published data relative to the light output of 1-lt. and 2-lt. high-pressure gas lanterns presented to the Association of Public Lighting Engineers' Conference in 1932, and that he did not realize when he made the statement that the 3-lt. high-pressure lamp to which he referred was of most exceptional size and seldom used.

Tests on 3-Light High-Pressure Lanterns.

Mr. Jones' figures for the 3-lt. high-pressure lantern represented the results of a test at the National Physical Laboratory on one lantern taken from service. A subsequent test on another lantern conducted with the co-operation of the maker and the Gas Light and Coke Company showed a light output of 260 lumens per cu.ft. of gas per hour (C.V. 500 B.Th.U.). This is representative of the efficiency obtained with 3-lt. units of this type.

Tests on 1-Light High-Pressure Lanterns.

Laboratory was arranged on a 1-lt. high-pressure gas lamp working under as normal conditions as could be reproduced in the laboratory, and the results indicated a light output of 327 lumens per cu.ft. of gas per hour (C.V. 500 B.Th.U.). The result is within 6% of the figures claimed at the meeting.

It is hoped that the above statement will clear up any misunderstandings. Both parties are indebted to the National Physical Laboratory for their assistance in the matter.

(Signed) W. J. JONES,
KENNETH F. SAWYER.

Mr. James Jamieson and Airdrie Valuation

In view of the offer of Coatbridge Gas Company to purchase the Airdrie Municipal Undertaking, to which reference has already been made in the "JOURNAL," Mr. James Jamieson, Engineer and Manager of the Edinburgh Gas Department, has accepted an invitation to value the Gas-Works of the Airdrie Town Council and to report to the Council on the terms of the offer.

Women's Gas Council News

Fanfare Changing Shape.

Fanfare, the official organ of the Women's Gas Council, has appeared in a new form. The pages are now half the original size, but the quantity is doubled. At the same time the price has been reduced to 3d. per issue, and news from headquarters and the branches is now published in the magazine and not as a separate supplement.

The present issue contains a description of the "Work of the Dietetic Department at the Manchester Royal Infirmary" by Miss Margaret Muriel, the Dietetian at the Royal Infirmary. This is the first of a series contributed through branches of the Women's Gas Council describing work of particular interest in their districts. Another article on "The Care of Dogs" is based on a talk given by a member of the Council to her branch. From practical experience the writer gives her readers sound advice on the training and feeding of dogs. There are also articles on gardening, cookery, fashion, beauty, needlework, and knitting, with a page of household hints.

In its new form this magazine has proved popular. Although it only appeared recently the first edition has been exhausted, and a re-print is now on the machines.

Educating the Young.

Miss Halpin, Organizing Secretary of the Women's Gas Council, was recently invited to address the day students of the South-East Essex Technical College on the work of the Gas Industry. This lecture was one of a series on occupations which the Principal of the College is arranging for the Senior Students.

Illuminating Engineers Discuss Ministry of Transport Final Report

The Final Report of the Departmental Committee on Street Lighting was discussed at a meeting of the Illuminating Engineering Society at the Institution of Mechanical Engineers on Feb. 8. Introducing Dr. J. W. T. Walsh, M.A., D.Sc., who summarized the recommendations of the Report, the PRESIDENT, Dr. S. English, referred to the fact that five members of the Departmental Committee were members of their Society. Most people, he thought, welcomed the Final Report, though they might not necessarily regard its findings as infallible.

Opening the discussion, the PRESIDENT referred to the lucid presentation of the Committee's findings by Dr. Walsh, whose remarks might have disarmed a number of intending critics. He moved a hearty vote of thanks to Dr. Walsh; this was carried with acclamation.

Mr. E. J. STEWART (Glasgow) said that perhaps the greatest achievement of the Departmental Committee lay in the fact that they had presented a unanimous report! It was their good fortune to have Dr. Walsh to give them matter for discussion, but in doing that, Dr. Walsh was not expressing his own opinions but was summarizing the Report, in which task he had succeeded admirably. The most serious considerations arising from the proposals were not technical; they were financial, and the first question of any responsible lighting authority would be "Where are we to raise the money?" Since few local authorities would be so generous as to provide more than a fraction of the cost (under 20% had been mentioned in the Report) the authorities hoped to find help from a national source. They all knew what was wanted in the matter of lighting requirements, but had of necessity to lag behind the desideratum rather than anticipate it, as they would do had they the necessary funds. Traffic densities were liable to change, and he wondered whether mere density decided the grouping of the streets. He was glad to learn of the latitude allowed by the Report. For lack of means they would have the paradox that headlights would do most harm in badly lighted streets by being comparatively more dazzling than in the better lighted streets where they were not so much required. The available information on glare was a little less sure than was the case a short time ago, but he thought that the "magnification factor" ought to reduce it. Surely the central row of lights as recommended would call for a 100% grant from somebody! He approved the first of the alternative proposals regarding the lighting of Group B roads.

Recommendations Apparently Delightfully Simple.

The Chairman of the Public Lighting Section of the Society, Mr. F. C. SMITH (Gas Light and Coke Company) stated that he had a bit to do with the technical side of the Report, but that evening was imagining that he was reading the Report for the first time as a layman. One thought at the outset what a wonderfully simple affair the Report was; it seemed equally simple when catering for both classes of lighting. From the lighting engineer's standpoint, however, one saw real need for a specification in detail. Without being critical, he thought the Report left off where things became difficult. The suggestions made in the Report were delightfully simple. For example, they were told they must have silhouette vision. Again no guidance was given on how to judge of the excellence of an installation. It particularly emphasized that lumen output was no criterion; in that respect it left them in the air. That was not very good when contract obligations were being considered. It was easy to criticize the glare clause, but he was of the opinion that if they avoided high intensity beams they would have done something to eliminate glare; the clause did not deal successfully with it. It was, however, a difficult matter with which to deal, and the clause did give them something on which to work.

He believed the Committee were wrong in eliminating the question of fog, for after all they were dealing with the safety of our streets and they were all aware of the dangers of foggy nights in London. In that connection his feeling was that there had been no technical grounds for very great mounting heights. Doubtless there was a case for them along very wide roads, but he would like to see alternating mounting heights. Returning to his interpretation of the Report as a layman, he asked how was one to set out bends; what constituted a bend; and how did one deal with an S-bend? Regarding maintenance, he thought the Committee might have been more courageous. When one came to work out the Report in practice, it was found that all the difficult points had been left to the consideration of the individual.

Mr. BICKNELL found difficulty in interpreting the Report in so far as the recommendations relating to street nameplates were concerned.

Mr. RILEY spoke of the provision of maximum contrast, subject, of course, to the avoidance of glare. He wondered why it should be taken for granted that maximum contrast should be adopted in street lighting when it was to be avoided in all other forms of lighting. In night driving he would say offhand that over 50% of the background was black, and he did not see how it improved matters if this were accentuated. He thought light should be thrown across the road and so avoid light in the driver's eyes. The brightness would be less but improved visibility would more than compensate for that.

Mr. PATMORE said they would do well to hasten the day when certificates could be issued to show that a lighting engineer was qualified for his position.

Order of Items.

Mr. G. H. WILSON asked was the Report really as difficult as Mr. Smith thought or as easy as Dr. Walsh represented it as being. While he thought there would always be difficulties in its interpretation the public reaction on the whole would be favourable to installations carried out according to the recommendations. He had not found the designing of bends perfectly simple, but by compromising one could produce an installation giving good results. The technical work which had been done recently and on which many of the recommendations of the Report were based indicated that the order of the items in the Report was not necessarily the order of importance in securing good visibility. He thought that visibility first depended on the position of the posts; secondly, the height of the units; thirdly, the amount of light given by the unit; and, fourthly, the particular distribution of the units, providing the glare clause was taken into consideration. It would help councillors if emphasis were laid in that order.

Mr. E. S. PERRIN said it would be interesting to note if any other publication with the exception of the specification were to follow the Report. Was it the intention of the Minister of Transport to resort to compulsion at the conclusion of a specified time in which councils were expected to bring their lighting up-to-date? Failing the ability of a council to meet the expense of a Class A installation, was it likely that some lesser class would be accepted as sufficient? What, if fixed, would be the degree of tolerance allowed and would this be in excess of the specified lumen output? He had found that the correct use of prismatic refractors reduced glare.

Dr. C. C. PATERSON had one criticism to offer; Dr. Walsh had coined the phrase "magnification ratio" for there was no mention of it in the Report. This really meant the amount of dazzle, and he would call it the "dazzle ratio."

Mr. E. STROUDE observed that the question of overhang demanded attention; it had been reduced. Overhang reduced visibility near the kerb and it was there he considered most accidents took place. He commented on the absence of any difference between a maximum Group B and minimum Group A installation.

Mr. A. CUNNINGTON, in a written contribution, pointed out that the Report stated to-day's case rather than that of the future. He wanted to see more of the cut-off lighting as demonstrated at Folkestone. It might be that type of lighting was more costly, but the duty of lighting engineers was to provide the best lighting.

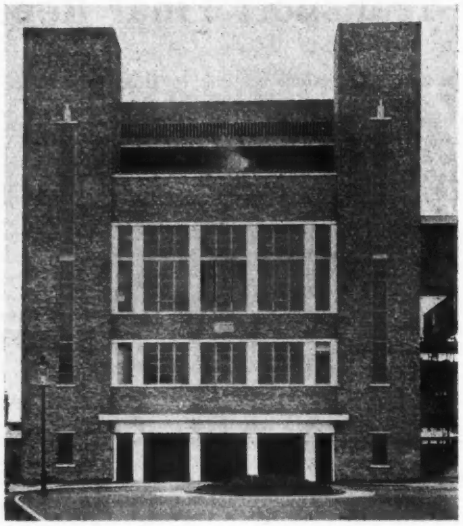
Mr. J. S. Dow spoke of the possibility that future development might lie in the smaller subdivision of sources. This multiplication, presenting a more even distribution with less glare, might one day be practicable.

Dr. Walsh Replies.

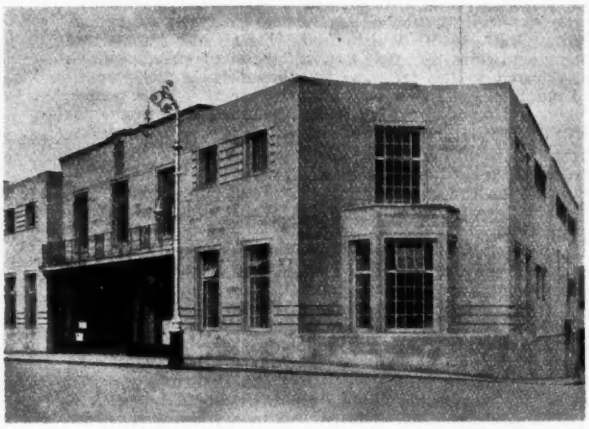
In reply, Dr. WALSH pointed out that the "light-consciousness" of the public would lead to the overcoming financial problems. In reply to Mr. Smith, he did not think that the Committee would attempt to decide on the question of the excellence of an installation, for even with a specification that would be difficult; it would, for example, be hard to compare two different sources which were both doing their work very well. He had caused some apprehension when he asked what was the difference between Classes A and B. He did not agree with Mr. Smith regarding fog. Mr. Bicknell's question was answered by the Committee's recommendation to bring the street name-plates near the lamp. On the question of glare, he confessed he had coined a term never used by the Committee.

Modern Carbonizing Plant and Showrooms

Inaugurated at Alloa



The Retort House.



The Showrooms.

Tuesday of last week marked the official opening and inspection of a new installation of Woodall-Duckham vertical retorts and ancillary plant, together with up-to-date showrooms, erected for the Alloa Gas Department. The carbonizing plant was inaugurated by the Rt. Hon. the Earl of Mar & Kellie, K.T., and the showroom premises by Mrs. J. P. Younger, wife of the Provost of the Burgh of Alloa.

Alloa Gas-Works was early in the field in the use of vertical retorts. The retorts were installed in 1914 and were of the Wilson-Glasgow type. Twenty-four retorts were erected capable of a production of 750,000 cu.ft. daily, and with the improved method of steaming ultimately equal to fully one million cu.ft. per diem.

The capacity of each retort was 2-3 tons per day, and the cost of the total repairs to the retorts over a period of 23 years was 6½d. per ton of coal carbonized. The installation is still fit for use and several of the first retorts (Glenboig) installed are in good working condition. The complete plant was supplied and erected by Messrs. R. & G. Hislop, Paisley.

When it was decided to proceed with the erection of new vertical retorts, two objects were in view: First, to build a plant capable of dealing with an increasing output of gas, at the lowest economic cost of production, and, secondly, that the plant and building should be of the very latest design in engineering practice and industrial architecture. The building as completed is of pleasing and attractive design, and may be regarded as an outstanding example of the wedding of Art to Industry. The building will still look new and modern in appearance many years hence.

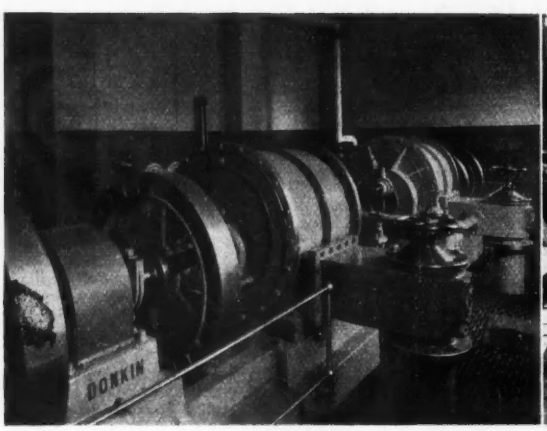
New Vertical Retort Installation.

The new Woodall-Duckham installation consists of one bench containing latest type upwardly-heated Woodall-Duckham continuous vertical retorts, 14 in number, and is capable of carbonizing 100 tons of coal and of producing 1¼ million cu.ft. of 460 B.Th.U. gas per day. The installation is provided with complete coal and coke handling plant and with a waste-heat steam boiler.

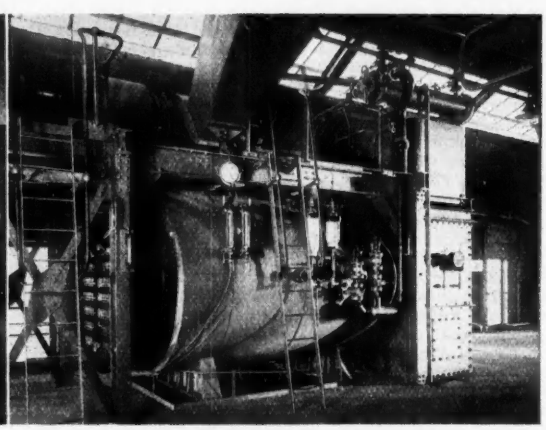
The installation has been designed so as to be readily extended, by the addition of four retorts. The retort house and the whole of the auxiliary plant has been designed capable of producing 2 million cu.ft. of gas daily. The present consumption of gas per day is equal to fully 1¼ million cu.ft.

The retorts are about 25 ft. high, rectangular in plan, and tapered to allow continuous regular descent of the coal. They are 62 in. long and 10 in. wide at the top, and are of silica brick from Messrs. John G. Stein & Co., Bonnybridge. An air-cooled division wall is built between each pair of retorts and the next pair so as to divide the bench into seven separate pairs which can be heated up, scurfed, or let down without interfering in any way with the working of the other retorts.

The retort design is in accordance with the latest Woodall-Duckham practice. The combustion of the heating gases takes place in an upward instead of a downward direction. This permits a zoning of heats which has been found to give the following advantages: (*a*) Perfectly regular travel of coal; (*b*) less scurf formation and less loss of time at scurfing periods; (*c*) better steaming conditions.



Exhausters.



"Cochran Sinuflo" Waste Heat Boiler.

The Woodall-Duckham system of upward heating in vertical flues, which follows the natural flow of the hot combustion gases, is particularly simple to put into operation and to control. When the heats have once been regulated, only the producer gas and waste gas dampers need adjustment.

By the introduction of the upwardly-heating principle the temperature in the vertical combustion flues is sufficiently reduced, at the point where erosion of the silica normally takes place, to allow the retorts at this level to be constructed with perfect safety in firebrick. By the time the coal has travelled past this belt of firebrick and enters the silica portion of the retort, it has acquired sufficient heat to avoid the extreme difference in temperature on either side of the retort wall, which is the main cause of the erosion of silica material at this point. In this way the full advantage of silica construction as regards high throughput of coal is obtained, with a reduction in maintenance costs.

Both the side walls and the top of the bench are efficiently insulated, with the double object of improving the working conditions and saving fuel.

Coal Supply to the Retorts.

An electrically-driven overlapping bucket conveyor, having a capacity of 45 tons of coal per hour, is arranged inside the retort house so as to encircle longitudinally the finally completed bench of eighteen retorts. Small coal is fed on to the top strand of this conveyor by means of a 20-in. wide band conveyor which is arranged to receive delivery from the top strand of the existing gravity bucket conveyor in the existing vertical retort house.

To supply the gas for heating the retorts, three producers are provided at the retort house floor level at one side of the bench. The producers are arranged so that any producer may be shut down without interfering in any way with the working of the other producers. The gas from any of the producers may be taken to any of the retorts. The producers are of the step-grate type and are constructed with ample grate area for the efficient heating of a finally completed bench of eighteen retorts when using a mixture of half coke and half breeze.

Waste Heat Boiler.

The flow of waste gases from the combustion chambers of each retort is controlled by two dampers, one for each side of the retort. The waste gases from each pair of retorts pass into a common flue and out through a neck into the waste gas main. This conveys the gases either directly to the chimney or to a waste-heat boiler which is provided for utilizing the major portion of the heat contained in the gases.

The waste-heat boiler, which is of the Cochran-Kirke horizontal "Sinuflo" induced draught type, is designed for a working pressure of 120 lb. per sq. in. It is of a size to deal with the whole of the waste gases from the fourteen retorts. In order that the boiler may give its maximum output, if at any time some of the retorts are not in operation, provision is made so that a supplementary supply of producer gas can be mixed with the waste gases before they are passed to the boiler, a supplementary combustion flue being provided.

The boiler is fitted with all the necessary steam and water mountings and fittings, including a high and low water alarm and a "Thermofeed" water regulator. Two single-cylinder direct-acting feed water pumps are provided for feeding water to the waste-heat boiler, one being a standby. The initial temperature of the feed water is raised to 200° F. in an independent enclosed tubular type heater working on exhaust steam from the fan turbine.

The whole of the steam required for the retorts, producers, extractor engines, liquor pumps, boiler fan, and feed water pumps is supplied by the waste-heat boiler and there is a considerable surplus available for other works purposes.

Main Contractors.

Piling, Gray's Ferro-Concrete Company, Ltd., Glasgow.
Foundations, James J. Phillip, Tillicoultry.
Vertical retort plant and building and coal and coke handling plant, Woodall-Duckham Vertical Retort and Oven Construction Company (1920), Ltd., London.

Chief Sub-Contractors.

Coal and coke conveyors, Babcock & Wilcox, Renfrew.
Belt conveyors, Barry, Henry, & Cook, Aberdeen.

The exhausters by the Bryan Donkin Company, Ltd., are in duplicate and steam driven. They have a capacity of 100,000 cu.ft. per hour.

Tar Fog Extraction.

A progressive policy has been adopted in regard to tar-fog extraction, a Whessoe Woodall-Duckham electro-detarrer having been installed at the outlet of the exhausters. This plant has a nominal capacity of 2 million cu.ft. of gas per day.

The W. W.-D. plant is a machine of very high efficiency and extracts 99·8% of the tar-fog present in the crude gas and thus ensures that the ammonia-scrubbing plant, the purifiers, and the benzole extraction plant are operating under ideal conditions. The back pressure thrown by the plant is only one-tenth inch water-gauge. A special feature of this particular plant is that spun-iron tubes of the well-known type are employed. The contractors for the plant were the Whessoe Foundry and Engineering Company, Ltd., and the English Electric Company.

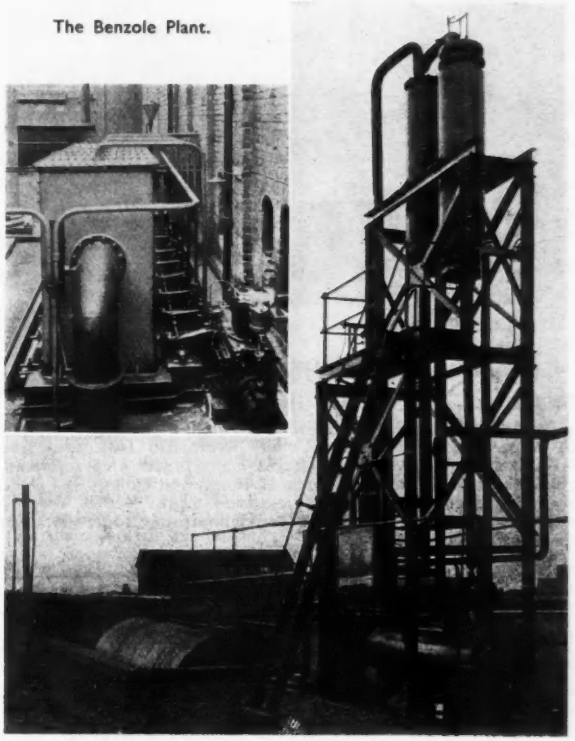
The washer is of the Livesey type, along with a brush scrubber, each equal to a capacity of 1 million cu.ft. of gas per diem, and made by W. C. Holmes & Co., Ltd. With the use of the detarrer the efficiency of this plant in having to deal with tar-free gas is largely increased for the extraction of ammonia.

Purification Plant.

Two boxes 36 ft. by 24 ft. have now been added. These are of up-to-date design by Newton, Chambers, & Co., Ltd., cast-iron construction with steel covers. Individual steam gas heaters are placed on the inlet to each box.

The Station meter, of the Connersville type, is of a normal rated capacity of 65,000 cu.ft. per hour. The contractors were W. C. Holmes & Co., Ltd.

The Benzole Plant.



The crude benzole recovery plant is situated after the purifiers. The washer is of the Thorncliffe static type by Newton, Chambers, Ltd. The whole plant is automatically controlled, works continuously, and crude benzole of any quality can be produced to meet market conditions. The pumps for the plant were supplied by the Harland Engineering Company, Ltd., of Alloa. The tar distillation plant is of the T.I.C. type, installed by the Woodall-Duckham Company. The plant is capable of treating 15 to 30 tons of crude tar per 24 hours. The manufacture of bitumen mixtures is also provided for.

The "Neckar" water softener plant is of the soda and saturated lime water type complete with continuous return device coupled to the three existing steam boilers and of a capacity of 20,000 gallons per 24 hours. The contractors were the Neckar Water Softener Company, Ltd.

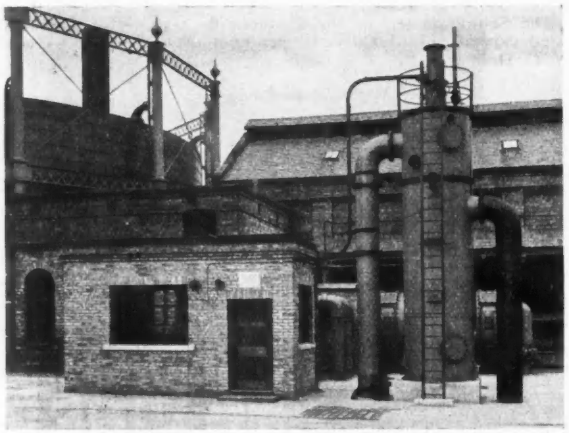
The New Showrooms.

In 1935 the Gas Committee decided to embark upon a complete scheme of re-construction and public improvement, with the acquiring of old properties in Bank Street and Stripehead. The site was completely cleared, and handsome new premises consist-

ing of showroom, workshops, and stores, with up-to-date equipment, have been erected.

The buildings exhibit a pleasing improvement to the architectural amenity of one of the main entrances to Alloa. The design is classical and is in keeping with modern business buildings of progressive industry. The stone selected is grey in colour from the Heworth Burn quarries in the North of England. The showroom front is in grey granite and bronze metal. The continuation of the building in Stripehead and Coalgate is in brick and roughcast.

The accommodation on the ground floor makes generous provision for the display of all kinds of gas appliances. The colour scheme is bright and attractive; the floor is of rubber. A hall seating 90-100 persons is provided for lecture demonstrations of cookery; there is also a general office with private rooms. The upper floors are devoted to the work of re-conditioning of cookers, meter testing, and repairs, and provide large accommodation for stocks of appliances for lighting, heating, and cooking by gas.



Electro-Detarrer Plant.

Accommodation is provided for the Public Lighting Department of Alloa Burgh and for the County Area, also Tillicoultry and Alva Burghs, there being 1,400 gas lamps fitted with automatic clock controllers; the whole area of Burgh and County is lighted by gas (with the exception of 40 electric lamps).

The buildings are fireproof throughout, the roofs flat and finished in asphalt.

The Plant Inaugurated.

Lord MAR, in opening the plant, said it was interesting to note that in the long period of 110 years there have been only four Managers of the Alloa Gas Department—Henry Young, George Boyd, Alexander Yuill, and, since 1902, Mr. Napier—all able men, and it is not too much to say that Mr. Napier was outstanding among the Gas Managers in Scotland, and that to his knowledge, energy, and ability the success of the concern to-day was largely due.

Provost YOUNGER recorded the appreciation of the Town Council to the contractors and sub-contractors concerned in the work at the new Gas Undertaking. The plant was thoroughly equipped. Its performance on a week's test against the guaranteed output was eminently satisfactory and the contractors were worthy of every congratulation. In Mr. Napier they had one of the most efficient men in Scotland and a Gas Manager, moreover, with an eye to the consumer to see that his lot was not unduly hard. The retorts were the finest piece of industrial architecture in the country to-day. When they were compared with a plant of the year 1914 it could be seen what a tremendous advance had been made. He offered the contractors most cordial congratulations on the erection of the building and the plant contained in it.

Dr. E. W. SMITH, Technical Director of the Woodall-Duckham Companies, replied. He said it was a matter of very great gratification to receive such eulogies as the Contractors had received that day. It might be considered a matter of form, but they knew by their own experience that there was every reason to be congratulated for what they had seen. They were glad that those who had to find the money for it were as pleased as they were. The Gas Industry had a long past, and he believed a still better future. One of the finest things they could do in the Industry to-day was to believe in themselves, in the dignity of their job, and have gas-works looking as respectable and as modern as any other industrial development; and there was no reason why that should not be so. The effect on the community was enormous, and he could only urge on gas engineers to be as far-sighted and progressive as Mr. Napier had been in connexion with this new development. On behalf of the contractors, he would like to express their appreciation of the way in which Mr. Napier had dealt with them. He had been a hard task-master—[laughter]—but reasonable at the same time. He would have many things done in his own way, but there was not a thing he had done that his firm, as the main contractors, disagreed with.

Continuing, Dr. Smith said that the Gas Industry, if there was going to be any serious national crisis, had got a great responsibility. Referring to the demand for coke, he said consumers could be divided into two main categories—those in the main earning £3 a week or less; and those in the main earning £3 a week or more. There were 65% of the total population of this country earning £3 a week or less, and 85% earning £5 a week or less; and not for a long time could the more expensive fuels be used by people who were earning £5 a week or less. He did not think there would be a fundamental change in gas production methods though there might be considerable modifications; but there was still room for research. What was needed in the Gas Industry was that there should be a great deal more co-ordination not only in the selling side, but also in the administrative side, and particularly in research. He urged that they should strongly support any movement in the way of fundamental research for the Gas Industry. He was not asking the producing side to "carry the baby." He thought there would be no difficulty in both sides of the Industry raising the money. In conclusion, Dr. Smith said he would like to thank Mr. Napier for his consideration in the work. In the new plant, Mr. Napier had a memorial that would live after him, and be a credit to him. On behalf of the contractors, he thanked them very much for their expression of appreciation.

Mr. J. W. NAPIER, in proposing "The Visitors," said he was very pleased to see so many representatives of local industries and gas undertakings throughout the country present there that day. He appreciated their presence very highly.

Manchester and District Juniors

There was a record meeting on Saturday, Feb. 5, when 150 members accepted the invitation of the County Borough of Blackpool to visit their Gas-Works.

Parties were formed for the purpose of inspecting the works, and a tour was also arranged for those wishing to inspect gas-heated installations on the districts.

Tea was served in the Winter Gardens at the kind invitation of the Council. The PRESIDENT (Mr. J. Albinson) thanked the Gas Committee for the opportunity afforded to the members of seeing the work that was being done at Blackpool. He said, the greatest asset that the town possessed was its wonderful tonic air, and it would be a crime to ruin it by smoke pollution.

Mr. A. K. COLLINGE (Preston) in proposing a vote of thanks, said that Blackpool was noted throughout the country as being a town of enterprise and progress. The same spirit pervaded the Gas Committee, and the Gas Industry followed with great interest the decisions they made. In Mr. Cook they had an Engineer of the highest repute. The spirit of progress was exemplified by a recent decision to remove the gas-works in order to provide greater railway facilities. The proposition was seconded by Mr. R. L. GREAVES (St. Helens), who said that Blackpool had earned its world-wide reputation by facing up to its problems. It has never hesitated to take action where necessary.

In reply, Alderman HOWE apologized for the absence of His Worship the Mayor, for whom he was deputizing. The plans of the new works were in keeping with Blackpool's motto "Progress," and they would be at least equal to anything in the country. They would not only be a show works, but also be an efficient works. His advice to Juniors was to give every thought to the work they had in hand. Chief positions could only be obtained by hard work and thought. Alderman NEWSOME, in supporting, said that they were faced with severe competition in Blackpool, and although both the Gas and Electricity Undertakings were owned by the County Borough, the Gas Committee lived up to, and by, that competition.

Councillor BAILEY urged the younger members to apply themselves to the problems facing the Industry.

Mr. T. R. COOK (Engineer and Manager, Blackpool) said that since he had been in Blackpool he had received the fullest support of every scheme he had put forward.

News of the Week

An Exhibition of gas appliances was recently opened by the Chairman of the Cork Gas Consumers' Company, Mr. E. T. Mahoney, at the City Hall. Mr. Mahoney referred to the ever-increasing popularity of gas in the City, where approximately every one in five of the population was a consumer.

Lighting Engineers from Many Towns have inspected the splendid street lighting in operation between Crown Point and the Manchester boundary at Denton. Carried out by the Hyde Gas Company, the Denton Urban District Council have resolved that the whole of their main roads shall be illuminated by the system. The Denton Council have entered into a ten-years' agreement with the Hyde Gas Company for all street lighting in their area.

Application for a Special Order is intended to be made to the Board of Trade by the Hessle Gas Company with the object *inter alia* of giving the Undertaking power to raise as required up to £40,000 additional stock with corresponding borrowing powers.

The Price of Gas at Warrington is to be raised by 4d. per 1,000 cu.ft. on Feb. 28. Explaining the reasons for this step, Alderman J. Poole, Chairman of the Gas Committee, states the increased liabilities of the Department amount to £26,000 made up as follows: £19,000 for coal, £3,000 in increased wages, and £4,000 for increase in price of materials. The £19,000 represents 60,000 tons of coal carbonized annually at a cost of 6s. 6d. a ton more than original prices.

I.H.V.E. Annual Meeting

Having lost their President, Mr. C. R. Allensby, in tragic circumstances, the annual meeting of the Institution of Heating and Ventilating Engineers in the Meeting Hall of the Institution of Mechanical Engineers on Feb. 9 was presided over at the outset by last year's President, Mr. A. B. Potterton.

A generous tribute to Mr. Allensby was paid by Mr. J. W. Cooling, M.Sc., A.M.I.Mech.E., Past-President of the Institution, who referred to the late President's wholehearted services on behalf of the heating and ventilating industry. Nobody who came in contact with him, said Mr. Cooling, could fail to be impressed with his sincerity. He was very jealous of the standing of the Institution, and during his term of office he spared no effort to impress that fact on Governmental departments. That he had done justice to the Institution's choice of him as their President was beyond doubt, and it was in large measure due to Mr. Allensby's efforts that during his year of office the membership of the Institution had exceeded one thousand.

Mr. G. Nelson Haden referred to plans for new headquarters on account of the expiry of the Institution's lease at 12, Russell Square. The Joint Offices Committee had recommended that premises at 22, Russell Square should be jointly occupied by the Association and the Institution. It was hoped that they would be able to move into the new premises well in advance of the Autumn Session. The proposals of the Council that the entrance fees and annual subscriptions be revised were explained by Mr. W. Nelson Haden, Past-President, who said there had been no increase since the foundation of the Institution. A substantial part of the receipts from that source would be devoted to research. The proposals were unanimously adopted.

Mr. W. W. Nobbs moved that the Council be composed of twelve Past-Presidents and eighteen elected members; this was carried.

The new President, Mr. G. Nelson Haden was inducted by Mr. Potterton, who said the Institution felt sure that from the record of his family and also the manner in which Mr. Haden had filled the breach during the past few weeks that the work of the Institution was in very safe hands. On taking the chair, Mr. Haden said he was very grateful for the high honour and for the confidence reposed in him. He was taking on his duties under a cloud of sadness, and he would like to thank Mr. Cooling for voicing his sentiments on Charles Allensby. He then read his Presidential Address, for which he was heartily thanked on the proposition of Mr. Nobbs.

The President then referred to the Council's decision to hand the Past-President's medal to Messrs. Benham & Sons, Ltd., of which firm Mr. Allensby was a Director, with a request that it be presented to Mrs. Allensby. If this arrangement were not acceptable, then the medal would hang in the Council Room as a permanent memorial to Mr. Allensby.

A Paper on "Earl's Court Exhibition—Mechanical Equipment" by Mr. Oscar Faber, O.B.E., D.C.L., D.Sc., M.Inst.C.E., and Mr. J. R. Kell was then read and discussed.

The Annual Dinner.

At the annual dinner which was held on the same day at the Park Lane Hotel, Piccadilly, W., the chair was taken by the President, Mr. G. Nelson Haden, B.Sc., A.M.I.Mech.E., M.Amer.Soc.H.V.E., who was supported by many distinguished guests, including Mr. H. C. Smith, President of the Institution of Gas Engineers, and a large gathering of members.

Immediately after the Loyal Toast, the President paid a generous tribute to the late President; it might be wondered, he said, why they were holding their dinner in spite of their great loss, but those who knew Mr. Allensby best would agree that they were only doing as he would have wished. "The Institution of Heating and Ventilating Engineers" was proposed by Mr. S. B. Donkin, President of the Institution of Civil Engineers, who referred to the courage of the Institution of Heating and Ventilating Engineers in carrying on without their President. He congratulated them on the achievement of their fortieth birthday this summer. In reply, the President thanked Mr. Donkin for his interest in the work of their Institution and for his encouragement. Craving indulgence for making personal allusions, he recalled that there were present that evening two members of his family who were Past-Presidents; one of these was his father, who was now Treasurer of the Institution. During the year two new branches had been formed. One of these was at Glasgow and the other at Nottingham. Their membership now totalled nearly 1,100.

"Our Guests" was honoured on the call of Mr. J. A. Macintyre, O.B.E., B.Sc., M.Inst.C.E., Vice-President, and responded to by Mr. R. G. Hetherington, C.B., O.B.E., Chief Engineering Inspector, Ministry of Health, and Professor A. E. Richardson, A.R.A., F.R.I.B.A.

The speeches were interspersed with part songs excellently rendered by the Templars.

The Search for Oil

At a Meeting held at the Royal Society of Arts on Feb. 9, the question of the search for oil in Great Britain was reviewed by Mr. John Roberts, D.I.C., the Fuel Technologist, in the light of a rather novel theory as to the origin of oil. In this Paper, the Author first of all discussed the world distribution of oilfields, and showed that all the oilfields of the world are closely associated with the great mountain ranges.

He then went on to show that certain rocks in these mountain chains, such as anthracite and marble, have been thoroughly studied, and their formation temperatures determined. Thus marble has been formed at about 800° Centigrade, and anthracite at about 550° Centigrade. The evidence in support was discussed at some length. Using these rocks as "natural pyrometers" in this manner, it was shown that every great mountain system has been, in the past, a region of high temperature, which Mr. Roberts regards as a "retort," or "generator," which brought about the natural distillation of the oil-yielding rocks. The volatile substances were expelled from the distillation zone to cooler regions where the conditions were favourable for condensation, and there the oils have accumulated.

It is concluded that in searching for oil in new territory it is of the first importance to study the mountain ranges, or the "backbone" of each country, as it is mainly along the flanks of these "backbones," or regions of great rock disturbance, that any real quantities of oil are obtained.

The Author went on to review the results of the drilling operations which have been carried out in England and Scotland in attempts to find oil, and explained the causes of failure in the South-East of England and in Derbyshire. The drilling companies having failed to find oil along the "backbone" of England, Mr. Roberts suggested that search should be made along the "backbone" of Wales, and in the Border Counties. Here the rocks reveal that the generating temperature has been sufficiently high to bring about the distillation of oil rocks, and drilling was suggested in certain specified districts where the conditions for oil accumulation are favourable.

According to the Author, certain localities in Scotland which have been subjected to the same mountain-building forces as operated in Wales offer some prospects of success, but he holds out little hope of any appreciable quantities of oil being found in the East and North-East of England, where oil drilling is now in progress. At the same time, he regards the matter as of such vital national importance that no reasonably promising avenue should be left unexplored.

Gas Films Attract Huge Crowds at Brighton Exhibition

Good work was put in by the Brighton, Hove, and Worthing Gas Company recently, when they took advantage of a "Home Life Exhibition" at the Brighton Dome and Corn Exchange to stage a display of up-to-date gas appliances in conjunction with a selection of Gas Films.

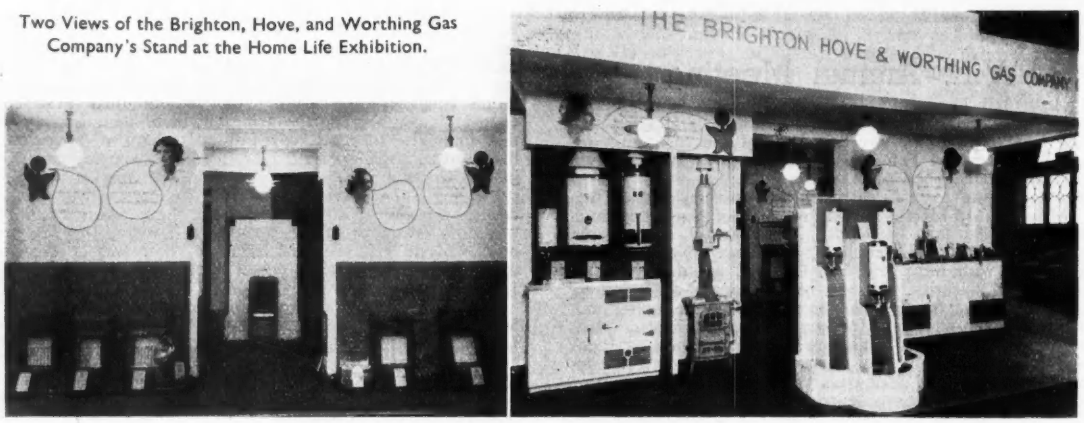
The Company erected a small theatre integral with the Exhibition Hall, where a continuous performance of films was given throughout the ten days of the Exhibition. The seating capacity of the Theatre was about 300, and altogether more than 24,000 persons saw the films, which must be something of a record for a show of this nature.

It may be of interest to mention the steps taken by the Company to attract their consumers to the films. They sent out with the accounts 40,000 cinema invitation tickets, which were also handed to prepayment consumers by the meter collectors. At the same time, small "reminder" advertisements were dotted about in the various papers in which the Company advertise, while, in addition, the Exhibition authorities featured the "Ciné Theatre" (omitting any reference to gas) on their own publicity material, such as 16-sheet posters, folders, and Press notices. The Company also received generous attention in the Editorial columns of the Press, "stills" of the films and other illustrations of gas activities being reproduced in the news columns.

At the entrance of the Theatre a cinema poster was exhibited setting out the programme of the forty-minute show in breezy style, and so large were the crowds anxious to gain admittance that four men had to be requisitioned to control the queues.

On the gas stand, two views of which we reproduce below, Miss Lockey, the B.C.G.A. lightning sketch artist, attracted a great deal of attention with her clever drawings.

Two Views of the Brighton, Hove, and Worthing Gas Company's Stand at the Home Life Exhibition.



National Gas Council

Meeting of the Central Executive Board

A Meeting of the Central Executive Board of the National Gas Council was held at Gas Industry House, 1, Grosvenor Place, London, S.W.1, on Tuesday, Feb. 8. The Chair was taken by Mr. F. Harding Jones, M.Inst.C.E., M.I.Mech.E., J.P. (Vice-Chairman of the Board).

The Late Mr. R. W. Edwards.—It was with great regret that the death was reported of Mr. R. W. Edwards, Managing Director and Chairman of the Mid-Southern Utility Company, and a member of the Central Executive Board. Mr. Edwards was one of the original members of the Council when it was formed in 1916, and had always been a staunch supporter of the work of the National Bodies. The Board endorsed the expressions of sympathy that had been conveyed to the family on their behalf, and stood in silence as a token of respect to their late colleague.

Resignation of Councillor Muter.—The Board received with regret the resignation of Councillor Walter Muter, owing to the fact that he had ceased to be Convener of the Edinburgh Corporation Gas Committee. He had been a member of the Board since 1936, and had rendered great service to the Gas Industry in many ways. It was agreed that a letter of thanks and appreciation should be sent to Councillor Muter on behalf of the Board.

Coal Position.—It was reported that numerous industries representative of large coal consumers in the country were, in common with public utilities, pressing for the Coal Bill now before Parliament to be so amended as to ensure to consumers that protection which was so lacking to-day.

The admittedly "unbinding" guarantees given by the mine-owners the previous night in Parliament as set out by the President of the Board of Trade (Mr. Oliver Stanley) were criticized as having no statutory force.

Grave concern was expressed by the Board that a monopoly such as the coal industry should be granted such unlimited powers. The only safeguard for aggrieved consumers afforded by the Bill were the Committees of Investigation, and during the Debate on the Bill it had transpired that appeal to these Committees could only be made in cases where contracts were made direct with the colliery, thus ruling out the large majority of contracts which were compelled to be made through factors or agents.

Consideration was then given to the steps which should be taken to safeguard the position.

Factories Act, 1937.—It was reported that a statement comparing the law relating to factories as it would be when the new Factories Act came into operation on July 1, with the existing law, had been prepared by the National Federation of Employers' Organizations.

A Guide to the Factories Act, 1937, had also been issued by the Home office, price 6d. This booklet contained a useful summary of the provisions of the Act and would, no doubt, be the authoritative text employed by Factory Inspectors.

It was added that copies of these publications might be obtained upon application to the Council, the price of the former being 2s. 6d. per copy.

Conjoint Conference.—The proceedings at the annual meeting were reported. It was stated that this year it had fallen to the gas interests to nominate the Chairman of the Council of the Conjoint Conference, the Chairman being elected in rotation by the three interests represented on the Conference. It was reported that Mr. W. B. Woodhouse had been re-elected Chairman. Mr. T. Hardie (Gas) and Alderman Sir Albert Atkey (Water) were appointed Vice-Chairmen for the ensuing year.

It was reported that a small deputation had met Miss Ellen Wilkinson, the promoter of the Bill, and had urged, on behalf of public supply undertakings, that it should not apply to hire purchase agreements entered into by such undertakings. Miss Wilkinson's reply, however, was non-committal.

Gas Bollards on Trunk Roads.—It was reported that the assistance of the National Gas Council had been sought by a certain Gas Company in the following matter: The Company had been successful in obtaining from the Kent County Council a number of orders for the erection and lighting of bollards with gas at road junctions. Among these was one situated at a road, crossing a trunk road within the meaning of the Trunk Roads Act, 1936. The Kent County Council informed the Company that they had received instructions from the Ministry of Transport that the bollards in question were to be lighted by electricity. The Council, having consulted the Chairman of the Joint Lighting Committee, wrote a letter of protest to the Minister and at the time asked that he should receive a deputation. It was satisfactory to be able to report, however, that the Ministry had reconsidered the position and had informed the Council that although it was thought originally that electricity would be the most convenient illuminant for experimental purposes in connection with bollards,

the Ministry had come to the conclusion that gas would be equally suitable, and that instructions had been given for gas to be used. In these circumstances it had not been necessary to send a deputation of the Ministry.

National Smoke Abatement Society.—It was reported that a letter was received from the National Smoke Abatement Society announcing that a Conference of the London Local Authorities and Members of Parliament would take place in the County Hall on Feb. 25 at 2.30 p.m. to discuss the formation of an Advisory Regional Smoke Abatement Committee of Local Authorities on the lines of those already in being in the Provinces.

World Power Conference.—It was reported that the British Commercial Gas Association had undertaken to prepare Papers entitled "Gas for Small-Scale Industries" and "Gas for Household Purposes" for presentation at the Vienna Sectional Meeting of the World Power Conference. These were being prepared respectively by Mr. W. Dieterichs and Mr. W. J. Sandeman.

The Institution of Gas Engineers had undertaken to prepare a Paper on "Gas for Public Lighting," in consultation with the Society of British Gas Industries. The joint Authors would be Mr. Davey and Mr. McGibbon.

Annual Meeting.—It was agreed that the Annual Meeting of the National Gas Council should be held at Gas Industry House on Tuesday, May 10.

Sidelights on the American Gas Industry

The following statement prepared by the American Gas Association contains interesting statistics relating to the Gas Industry in the United States.

The steel business has long been considered one of the most basic of the great industries of the United States, affording employment to many thousands and manufacturing a product which has become an essential to the complex industrial civilization of that country.

Yet the average person would probably be surprised to learn that the investment in the American Gas Industry exceeds by many millions the amount of capital employed in the production of steel. While some $4,200,000,000 have been invested in the steel plants of this country, almost $5,000,000,000 of capital is required to provide gas service to the 17,000,000 customers of this great Industry. To-day, towns and cities with a population of more than 80,000,000 people have available the innumerable conveniences afforded by this most modern fuel, gas.

More than 135,000 people are employed by the manufactured and natural gas companies of this country at an annual payroll in excess of $213,000,000. An interesting side-light on the contribution of the Gas Industry toward improved living conditions for the workers engaged in supplying this essential service is indicated by the fact that, whereas in the big year 1929 the average employee in the Gas Industry worked 48 hours per week, by 1936 this had been reduced to 40 hours per week, and yet his average weekly earnings for the 40-hour week were slightly higher than in 1929.

An important factor in this accomplishment and in the maintenance of the high standard of service to which gas customers have become accustomed, is the tremendous amount of capital that stands at the back of each worker in the Gas Industry. For example, in the automobile industry, approximately $3,000 has been invested in plant and machinery for each worker employed. In the case of steel, this figure is nearly $7,000, while the railroads have an investment of approximately $25,000 for each employee. Yet the average worker in the Gas Industry has behind him the tremendous investment of nearly $37,000.

Wages and salaries in the Gas Industry are high, amounting to an average of $1,575 a year, as compared with $1,421 for steel and $1,470 for the automobile industry. And yet for each dollar disbursed by the Gas Industry in the form of wages and salaries, an additional forty cents is turned over to the various State, Federal, and local authorities in the form of taxes.

Revenues of the entire Industry, both manufactured and natural gas, aggregated in excess of $801,931,000 in 1937, a gain of 4·1% over the preceding year of 1936. The natural gas companies grossed $441,176,000, a gain of 6·9% for the year, while revenues of the manufactured gas companies were $360,755,000, as compared with $357,531,000 in 1936, an increase of 0·9%.

During 1936 alone 1,464,000 gas ranges were sold, more than equal to the entire number of electric ranges in use at that time. Preliminary estimates for the year 1937 indicates sales of nearly 1,600,000 ranges, a gain of 10%, a figure equalling the previous peak established in 1929.

Many gas companies have recently inaugurated more favourable rates for house heating through central plant burners and equipment. It is estimated that the total number of gas central house heating installations connected to the lines of all United States gas companies in 1937 amounted to 735,000. In addition there were approximately 1,300,000 dwellings heated by unit heaters, space heaters, floor furnaces, &c., giving a total of more than 2,000,000 homes in the United States that are heated by gas.

The past year and a half has been characterized by an increasing appreciation of the great potential market for domestic water heating. There has been a widespread adoption of rates more favourable to the use of gas for this purpose. This has been accompanied by a marked acceleration of local sales effort and a nation-wide co-ordinated campaign to promote the use of gas for water heating. So successful have been the results of this programme that it will be continued during 1938. For instance, the sale of automatic type gas water heaters during 1937 is expected to average more than 20% above 1936.

More Multi-Points for South London

Gas water heating appears to be making splendid progress in South London districts, according to a note which is included in the current number of the South Metropolitan Gas Company's *Co-Partnership Journal*. Here are just a few of many recent installations of multi-point heaters:

In each of 30 flats in Lewisham road.
In „ 28 „ at Blackheath Village (also a gas refrigerator is fitted in each of these flats).
In „ 28 „ at Eltham.
In „ 24 „ at „
In „ 132 „ at Grove Park.

In addition, 170 "Ascot" multi-points have been installed in the Metropolitan Police flats at Waterloo, while on a new L.C.C. housing estate nearby 146 similar appliances are being fitted. Such news is very encouraging to the Industry, representing as it does the installation of 558 heaters on these few jobs alone. There is no doubt that the load is there for the seeking.

The New Streatham Showrooms

Our photograph shows the exterior of the very attractive new gas showrooms of the South Metropolitan Gas Company at Streatham Hill, to the opening of which we referred in the "JOURNAL" for Jan. 26.

A SIX-YEAR PERIOD PRIOR TO THE

Removal of the Blackpool Gas-Works

by

T. V. BLAKE,

of the Blackpool Gas Department.

From a Paper read before a Meeting of the Manchester and District Junior Gas Association held at Blackpool on Saturday, Feb. 5.

For a number of years it has been considered desirable that the removal of the gas-works from a position in close proximity to the Promenade would improve the amenities of Blackpool and further popularize the town as a seaside resort.

Apart from necessity, there are many other matters to be considered, including:

(*a*) The capital value of the land at present occupied by the gas-works.

(*b*) The capital invested in the gas plant.

(*c*) The cost of erecting another gas-works on a different site.

(*d*) The maintenance of the low selling price of gas at which this commodity is supplied to the consumer at Blackpool.

(*e*) The capital expenditure on the existing works must be kept at a minimum, commensurate with safe working during the interim.

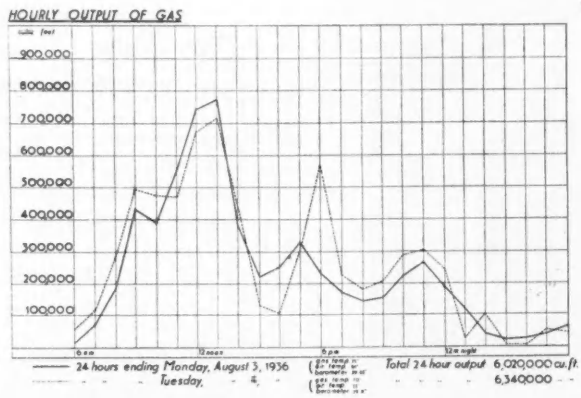
It is usual to provide gas-works plant of sufficient capacity to meet all demands of gas supply over a period of about 20 years. Such is not entirely the case, however, in regard to a progressive seaside resort, since weather conditions, affluence or otherwise of the visitors, advertising, &c., all exert an influence on the seasonal demand for gas, which is difficult to forecast. Moreover, as the greatest output of gas occurs during the hottest months of the year and the hottest hours of the day, much larger volumes of gas need to be dealt with consequent upon the existing atmospheric temperatures.

Consequently, although a period of 20 years may constitute an initial estimate, frequent revision during this period is necessary. Also, with regard to the Blackpool Gas-Works, the approximate date of removal to another site had also to be envisaged.

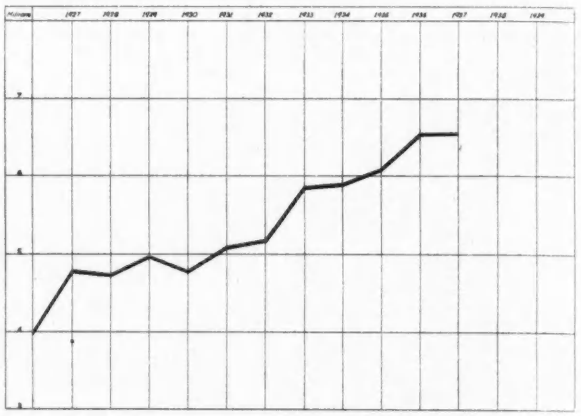
The following notes I have collected cover a period during which provision has been made in order to maintain an adequate supply of gas economically and extend the useful life of the plant.

Consumption of Gas.

The following graphs have been constructed to indicate the effects of the influences mentioned in an earlier paragraph on the gas output in Blackpool and offer an interesting comparison with those of an inland town.



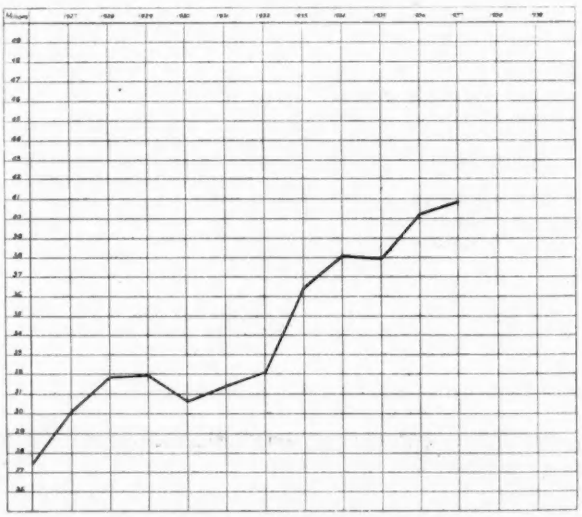
Graph A.—Maximum Hourly Output of Maximum Day's Load.



Graph B.—Maximum Daily Output of Gas.

← Period under review →

1931 1937



Graph C.—Maximum Weekly Output of Gas.

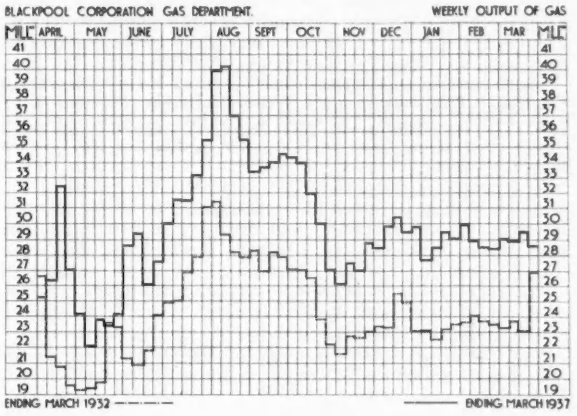
← Period under review →

1931 1937

The graphs are self-explanatory, but it will be noticed from Graph D that the summer season load extends over several more months of the year than is usual in most seaside towns. Again the "short holidays" at Christmas, Easter, and Whitsuntide are clearly indicated by their respective peak loads.

Graph D also indicates that there are no very lengthy periods of the year during which major repairs and renewals can be carried out, thus adding one more peculiarity when comparison is made with the usual procedure at an inland town gas-works.

Having dealt with the type of load curve presented, I will



Graph D.—Weekly Output for the Years 1932 and 1937.

add a few notes of the work done to meet continued demand on a similar scale.

With the advent of more employment in the industrial towns and extensive building operations in the town itself, the increase in output of gas soared rapidly, and immediate consideration had to be given to the gas making and ancillary plant.

Carbonization Plant.

The total carbonization plant operating at peak load was equivalent to a maximum make of approximately 4½ million cu.ft. per diem, and as this plant had had no complete renewals since its erection, additional settings had to be built to facilitate rebuilding of the existing settings.

Two settings of eight retorts each and a total capacity of 1¼ million cu.ft. per diem were added to the existing six settings in No. 3 Retort House. All the modern improvement of design and operation were embodied in these extensions carried out by Messrs. West's Gas Improvement Company, Ltd. The extensions necessitated the preparation of foundations on block concrete carried to a depth of 14 ft. owing to the bog subsoil; extension of the lip bucket conveyor for dealing with the coal and coke; and construction of the settings and coal bunkers, these latter necessitating the extension of the dormer. The latest type of coke extraction mechanism was also incorporated in the scheme. Substitution of lengths of new conveyor chain in place of worn parts was made at intervals so that no part was at any time more than three years old. Frequent exchange of buckets was made and patches were applied to the corroded parts by means of arc welding, the repaired buckets being returned to the chain for further service.

With the additional plant operating efficiently, attention was paid to the rebuilding of the other six settings. Two settings and producers were rebuilt each year for the three succeeding years, thus completing the reconstruction of this retort house.

The carbonization plant in No. 4 Retort House, comprising six settings of eight retorts in rows of two retorts and of a capacity of 2¼ million cu.ft. per diem, next received attention, and three settings were entirely rebuilt from ground level. The retorts were partly built of "Peaksil," a new material found by the firm to be suitable for retort construction.

Major renewals and repairs were carried out by own retort setters on the remaining three settings in this retort house. Under the telpher track leading from No. 4 Retort House three additional coke storage hoppers of 160 tons capacity were erected from materials retrieved from the horizontal plant, now dismantled, in No. 2 Retort House. This erection was done by our own workmen and enables coke to be loaded into wagons or into bags.

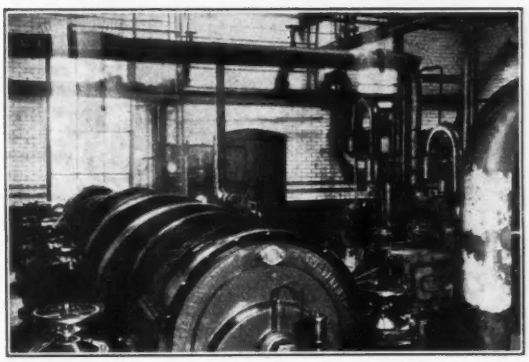
Maximum make of gas occurring during the period of hottest weather necessitated attention being paid to our cooling plant, as at times the exhausters were called upon to run at excessive speeds. By rearrangement of the crude gas mains the whole of the atmospheric and water cooled types of condenser were placed in the series, as inlet to exhausters.

By means of high speed pump circulation of well water through the condensers much better cooling efficiency was obtained. The effluent hot water is cooled over a "Premier" cooler and returned for further use.

Exhausters.

The overloading of the existing exhausters necessitated taking excessive risks with this indispensable machine, and a new Bryan-Donkin twin set exhauster of a rated capacity of 300,000 cu.ft. per hr. was installed, and in conjunction with a set of 250,000 cu.ft. per hr. capacity as stand-by satisfactorily deal with the maximum volume of coal gas made. Another unit transferred from the East Works to the West Works of 180,000 cu.ft. per hr. capacity and one of 180,000 cu.ft. per hr., as stand-by, together suitably deal with the increased make of gas when making carburetted water gas.

Much of the plant comprising Livesey washer, scrubbers, and oxide purification plant, including connecting mains, was considerably overladen during times of maximum gasmaking; consequently heavy back pressure conditions existed throughout this, the larger section of the works and the frequency with which cracked plates occurred on the purifiers emphasized the need for more plant.



East Works Engines.

North Section.

A complete section of the most modern type of plant was erected on foundations prepared by our own workmen. Of 3 million cu.ft. per diem capacity, this section comprises Clapham water cooled condensers, Livesey washer, P. & A. tar extractor, and ammonia scrubbers erected by Messrs. W. C. Holmes & Co., Ltd., and oxide purifiers by Messrs. E. C. & J. Keay, of Darlaston. All connections are of 24 in. diameter welded steel or cast-iron main.

The existing underground crude gas main connecting the inlet condensers on the East Works with the exhausters on the West Works was considerably under size, and also the "intakes of air" on this main did not indicate complete soundness, also it was almost inaccessible. Therefore, a 24 in. riveted steel main recovered from No. 2 Retort House was laid on a similar route but above ground level. Apart from the advantage gained by having a larger main, better control on the West Works purifiers was obtained, since previously a separate supply of air for revivification was unnecessary, as sufficient, although variable, was already contained in the gas stream. The original main was then blanked off.

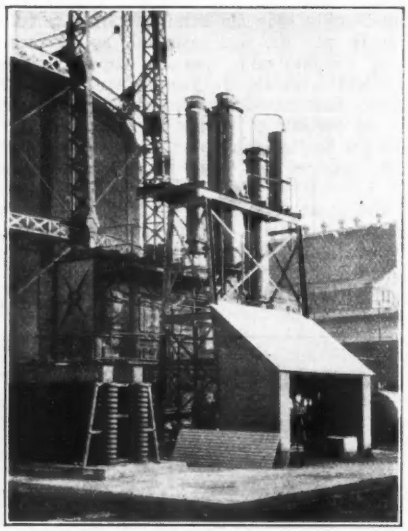
With the recent installation of 1½ million cu.ft. per diem C.W.G. plant erected on the extended foundations of a previous ¾ million cu.ft., together with an existing 1¼ million cu.ft. unit, not more than 2 million cu.ft. of gas per diem was obtainable even by working both plants together. This was chiefly due to the original blowers having been retained, although both plants had been enlarged.

Messrs. R. & J. Dempster, Ltd., the manufacturers of this

well-known back run type of plant, are now installing a new steam-driven blower which will increase the output of C.W.G. considerably with the safety so essential in emergency plant.

Benzole Extraction Plant.

A great deal of thought was being given throughout the Industry as to the economic as well as the national benefits accruing from the recovery of benzole from the purified gas.



Benzole Extraction Plant.

Among the problems to be considered was the value of the therm in the form of town gas or as recovered as benzole. We have found that one gallon of benzole recovered is equivalent to an amount of heat represented by a diminution of about 15 B.Th.U. per cu.ft. in the calorific value of the gas. Hence, in order to deliver gas of 450 B.Th.U. per cu.ft., the quality of the gas at the inlet to the benzole plant must be of about 465 B.Th.U. per cu.ft. Consequently, alteration has to be made in the retort house. We have found, apart from other considerations, that 400 cu.ft. of gas per ton of coal carbonized has to be sacrified for each gallon of benzole extracted. Thus the market value of benzole had to be considered. On this point, however, a good profit is shown from benzole recovery, and more than 60,000 gallons of benzole and naphtha are sold annually. We also find that the plant constitutes a valuable ancillary (approximately 2% of the total output of the gas) to the carbonization plant, particularly during the period of Autumn Attractions, when the output of gas varies considerably at week-ends and mid-week periods.

The benzole extraction plant installed by Messrs. W. C. Holmes & Co., Ltd., is on the oil washing system. The purified gas before storage is passed through a Holmes "Multifilm" washer, wherein it is treated in successive chambers with a mixture of spindle and gas oils kept in continuous circulation by means of sextuple pumps. The oil gradually brings the benzole (containing practically all the naphthalene content of the gas) into solution. By means of steam distillation and dephlegmation of this solution, the benzole and naphtha are driven off, condensed, separated, and stored. The de-benzolized oil is partially cooled and returned to the washer for re-circulation. The crude benzole recovered distils 60-70% at 120° C., and further rectification is not carried out on this plant.

Special under-pressure connections were inserted in the trunk main for the installation of the plant without interference with normal procedure.

Ammonia Concentration Plant.

The length of steam line from the Lancashire boilers to the ammonia concentration plant made the cost of manufacture of concentrated ammonia extremely high. Added to this, the dilapidated condition of the plant, which was a converted sulphate of ammonia plant, caused considerable nuisance and required continual supervision.

A modern plant was installed on the East Works by Chemical Engineering and Wilton's Patent Furnace Company, Ltd., capable of treating 24,000 gallons of crude liquor per diem, and making 16% quality concentrated liquor.

This plant is automatically controlled by means of the Drayton system of regulation. The flow of liquor is passed through a Kennedy meter, and both steam and liquor supplies being under control, a steady temperature of distillation is attained. Surplus steam from the waste heat boilers in the retort house is used for operating this plant. Instead of a considerable loss, a small margin of profit is now obtained from this process.

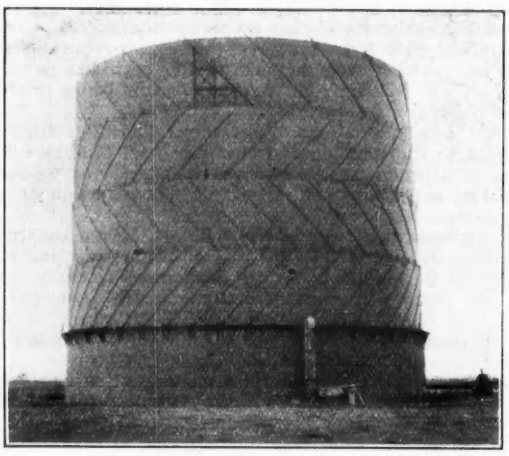
With a view to greater economy in the use of town's water, the cost of which in Blackpool is abnormally high, all the Lancashire and waste heat boilers are supplied with water obtained from the works well after treatment in a Neckar softening plant. By this means the boilers are kept quite free from scale.

Storage of Gas.

At the commencement of the period the holder capacity totalled 3¾ million cu.ft., and consisted of No. 1 Holder of ¾ million cu.ft. constructed by Messrs. Clayton, Sons, & Co., Ltd.; No. 2 Holder of 1½ million cu.ft. by The Furness Ship Building Company, both of these holders being of the spiral guided type, and No. 3 Holder, a column guided holder of 1½ million cu.ft. capacity erected by Messrs. Clayton, Sons, & Co., Ltd., in 1898.

The total storage capacity of 3¾ million cu.ft. constituted 11 hours on "hourly" storage, although representing 18 hours on "daily" storage, and, with the maximum output of the C.W.G. plant, 24 hours of the maximum day's output. Increased holder storage capacity was obtained only when this "hourly" storage had become reduced to only 7 hours of the maximum day's output.

Moreover, No. 3 Holder was apparently in need of extensive repairs, there being no fewer than 1,100 patches thereon, especially on the side sheeting, the second lift being the most seriously affected and on the seaward side, as would be expected. With no knowledge of the internal condition of this holder, it was with constant fear for its safe working that it was kept in commission. Thoughts of sacrificing approximately half the total storage added to our concern, should this holder need urgent attention.



New 3 Million Cu.Ft. Gasholder.

The need for additional storage capacity was therefore imperative, and decision had to be made whether a new holder should be erected on the existing works or whether this holder should constitute the first unit of the new gas-works. The latter plan was adopted.

A site consisting of about 100 acres of fairly level pasture land was purchased. Trial boreholes were made and revealed a moderately uniform and deep bed of hard clay at a depth of from 4-6 ft. below ground level. The site is about three miles distant from the present works, bounded on the south side by the Preston-Blackpool railway and a future main road into Blackpool on the north side.

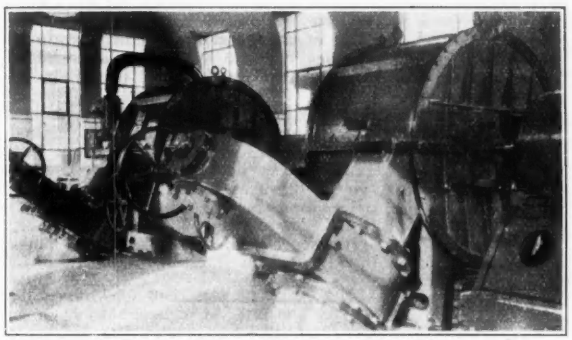
The holder erected by Messrs. R. & J. Dempster, Ltd., is of the four lift spiral guided type, of 3 million cu.ft. capacity resting in a steel tank above ground level. The whole structure was erected on a 9 in. raft of reinforced concrete, put down by J. L. Keir & Co., Derby.

The construction of the holder embraces all modern improvements and is of steel, with the exception of all plates of less than ¼ in. thickness, where wrought iron is used in order to withstand the effects of corrosion.

While the whole capacity of the holder is available for storage, the third and fourth lifts only are at present made use of for gas supply. In this manner adequate pressure for low-pressure load is obtained and the periods of boosting are curtailed.

A Stanton spun half T & B cast-iron trunk main of 30 in. diameter and 4,600 yd. long connects the new holder with the existing works, supplying en route through Reynolds-Bryan Donkin clock controlled governors adequate pressures at all times to a rapidly developing building area and also connecting with the existing feeder mains, which in turn are linked with the high-pressure main. In this way a ring supply of gas, suitably governed, ensures an adequate supply of gas throughout the area.

Suitably housed on the existing works, boosting plant of the two stage type and in duplicate operates in connexion with the main and new holder. Provision is made whereby gas may be drawn from all the holders and boosted either



Gas Boosters.

through the station governors on to the town or into the new holder.

Installed by Messrs. Keith Blackman, Ltd., one set is driven by a Belliss & Morcom 145 h.p. steam turbine and the other set by a Greenwood & Batley motor of similar horse-power, the current for this unit being supplied from the works generating plant. Each set is capable of delivering ½ million cu.ft. of gas per hr. at 48 in. w.g. pressure at the station governors.

A Widlake Distance Recorder is installed to reveal to the operator the height of the new holder at all times. Electrical impulses over a Post Office telephone line actuate the instrument.

Installation of a 150 kW Generator.

With a greater demand for electric current, consequent upon the installation of the boosting plant and with the desire to obviate as much as possible the use of town current, an entire reorganization of the generating plant was made. Several small units were dismantled and replaced by a 150 kW E.C.C. generator driven by a Belliss & Morcom steam engine which was erected in the East Works engine house.

The remaining generators of 75 kW and 50 kW were removed from the power house inside No. 3 Retort House and erected alongside the larger unit to carry the lighter electrical loads. A new switchboard operating all sections of the plant was also installed in conjunction with these alterations.

Examination of No. 3 Holder.

With additional storage provided by the installation of No. 4 Holder, detailed examination of No. 3 Holder was carried out while the holder was in commission. The holder was found to be practically level in all positions of inflation, indicating that the internal guides and rollers were in safe working condition. The columns were found to be plumb, and after setting up of the external carriages attention was turned to the more obvious defects—namely, the corroded side sheets, which necessitated the excessive number of patches. Test pieces of the sheeting were examined and satisfactorily withstood the "bend test." Although internal corrosion was evident, the general thickness of the shell indicated a few more years of useful life with safety. With the assurance that the number of patches applied were necessitated more by excessive pitting, the small plates and bolts were removed and larger and thicker plates were fixed to strengthen the affected plates as a whole. By means of a special form of plate placed over the riveted joints and carried on to the adjoining plates, further stability was obtained. The crown was similarly treated and finally coated with hot dehydrated tar.

Gas Compressors.

Considerable concern was felt about the maintenance of the high-pressure supply, as this depended for its continuance solely on one machine installed by Messrs. Browett Lindley in 1926, designed to deliver ¼ million cu.ft. per hr. at 12 lb. per sq.in. pressure, but during peak hours as much as 15 lb. per sq.in. was demanded. Also, as the demand for a high pressure supply of gas increased, the running hours per diem of this compressor were consistently greater.

There was considerable gas leakage from the high pressure gas cylinder, and early attention to pistons, piston rods, and crankshaft was demanded. Since much time would be necessary to undertake these repairs, the only remedy was the installation of another compressor.

Block concrete foundations were laid and a duplicate machine was installed by Messrs. Broome & Wade, all steam, gas, and other controls being coupled up with the existing systems.

With this compressor in commission, attention was given to the older machine and the faulty parts were renewed or repaired.

Distribution.

In conjunction with the work carried out on the works, much additional work was called for on the district. The main object was to develop large ring supplies, roughly in a direction running north and south, and at intervals between the western and eastern boundaries of the area of supply, and finally linking up with the Promenade high-pressure main. From this system larger branches were taken off and the dead end mains connected up, in order to cope with the extended use of gas in the existing property situated in the central parts of the town. The supplies of gas to the rapidly developing building area extending in an easterly direction were also drawn from this ring system of supply. Some 1,500 houses per annum were built during this period, besides the equipment with large gas "services" of 6 in. and 4 in. to the new Technical School, the Crematorium, large biscuit making works, confectionery making factories, and also a large number of hotels, boarding houses, stores, and cafés.

A 6 in. main was extended from the town area of supply to the Poulton Gas-Works for re-distribution. This bulk supply of gas delivered to the Poulton holders at not less than 6 in. pressure is estimated to constitute an additional annual output of 25 million cu.ft.

Altogether, the total length of mains, varying in size from 30, 15, 12, down to 4 in., was over 70 miles, and services amounting to over 11,000 were laid during this period.

Street Lighting.

In spite of keen competition with the up-to-date forms of electric lighting for road lighting, miles of main roads are still lighted by gas. Placed at heights of 25 and 30 ft., high-

power low-pressure 9 and 12 mantle units are proving in many ways superior to our competitor's greatest efforts in providing uniform and efficient lighting of road surfaces. These lamps are fitted with governors and fixed nipples, and are clock controlled. Four mantle alignment units fitted with reflectors have displaced the older types for secondary roads and side streets.

The total increase of gas lighted units amounts to 1,500 and the consumption of gas from this source has increased by 63 million cu.ft.

Sales and Maintenance of Appliances.

During the period under review an arrangement already made with the local plumbers and ironmongers was continued. The gas showroom in conjunction with the many business premises as multiple showrooms conduct the business throughout the town for cash and hire purchase transactions. Support is thus given to local industry and employment is provided for plumbers and gas fitters.

An up-to-date showroom is maintained at the works, and the normal business of the gas showroom received, technical advice given, and in a well-equipped demonstration room adjoining customers can view the operation of all types of appliance.

Apart from the business done by the appliance dealers, the total trade arranged for by means of the showroom was over 9,800 cookers, 1,300 fires, and 2,700 other appliances by the different methods of purchase, and also over 1,200 water heaters, 300 fires, and 200 other appliances let out on simple hire.

Unexpired periods of hire purchase are arranged for on equable terms with a new customer after the appliance has been reconditioned in our own workshops.

Meters are repaired and old 3 and 5 light sizes are replaced by the high capacity type by our own workmen.

Gas appliances in hotels, boarding houses, factories, &c., are maintained in efficient working order by means of a scheme whereby each appliance is normally inspected four times per annum.

Having reviewed the various activities in all branches of the Blackpool Gas Undertaking during the past six years, it may now be stated that with normal attention to repairs of the existing gas-works plant and the extension of the distribution and sales system, no major scheme can be hoped for until the construction and operation of the new gas-works is complete.

I have endeavoured to confine these notes to reasonable dimensions by giving somewhat scanty details of familiar gas-works plant and at the same time have emphasized the salient points in connexion with the work carried out.

Should you be interested in the perusal of same when confronted with similar problems, I shall feel amply rewarded for my efforts in the preparation and presentation of this Paper.

I appreciate the kindly interest taken by my Chief, Mr. T. R. Cook, M.Inst.Gas E., in the preparation of the Paper and express thanks for granting me permission to publish the details of the different schemes carried out.

Discussion.

The PRESIDENT (Mr. J. Albinson) congratulated the Author, stating that it was a record of a fine achievement when it was realized that in addition to making the existing works capable of coping with an increasing demand a new works had also had to be contemplated.

Mr. J. A. SPEERS (Preston) asked to what extent the sulphur compounds in the gas had been reduced by the operation of the benzole extraction plant.

Mr. BLAKE replied that the sulphur compounds had been reduced from 23-24 grains to 7-8 grains per 100 cu.ft. of gas. In reply to further questions, Mr. Blake stated that it was a decided advantage to generate their own current, which was D.C. Constantly applied loads were much better on D.C. than A.C. On the West Works, alternating current was used, but there was no retort house machinery on that site. With regard to the benzole plant, it was a decided advantage to be able to increase the output of gas by 2% by not working the benzole plant. During the autumn illuminations, vast crowds came into the town at week-ends, the result being that the demand for gas was greatly increased, and the benzole plant was one of the methods adopted for meeting the increased load. It was utilized as ancillary plant.

Mr. A. L. HOLTON (Manchester) asked if such a procedure was an economic proposition. Would that policy be adopted when the new works were put into commission or would the load be met by water gas? Mr. Blake stated that it was advantageous at the present time to meet the demand by shutting down the benzole plant, rather than by making water gas. It was a policy that was decided in consideration with the coke market. There was an excellent market for coke in Blackpool, and by the end of February or March all the accumulated stock of, say, 10,000 to 12,000 tons would be exhausted.

Mr. HEALD (Preston) called attention to the policy in operation at Blackpool whereby gas appliances were sold only through ironmongers and merchants who merely waited for business to come along. Every other undertaking had salesmen or canvassers who were endeavouring to obtain business and sell appliances. In his opinion it was a most antiquated system.

Mr. COOK (Blackpool) said that he was very pleased to receive criticism of the scheme. He agreed that it was not without defects, but it had been in operation for a long time and the Gas Committee was not responsible for it. He did not like the scheme, and hoped that it would be modified. On the other hand, the plan enabled orders to be dealt with promptly and there was no delay in fixing new appliances. Another feature was that if saturation point was ever reached, the Gas Committee would not have a large staff of gas fitters in their employ with no work for them. Under the present system, if 30 orders were received one day they would be completed the day following and connected up. He thought there were few undertakings which could boast that at the end of the week they had completed and connected up all their orders.

Replying to a question regarding the data given in the Paper on the benzole plant, Mr. Blake stated that the figures were based on working results and not on theoretical calculations. With the benzole plant working a calorific value of 450 B.Th.U. was maintained, but when it was shut down the calorific value went up to 465 B.Th.U. Over a long period of intermittent working it was found that there was a reduction of 400 cu.ft. of gas per ton of coal carbonized when benzole was being produced. The theoretical loss was calculated on pure benzene, whereas the product was only 50% benzene.

Mr. HAINSWORTH (Wallasey) enquired if any experience had been obtained by the use of the quasi arc welding set for the spot welding of holder plates, or plate welding on top while the holder was in commission. Also whether any live mains had been welded.

Mr. BLAKE replied that they had successfully welded plates on the gasholders, but owing to the thickness of the metal it should be done by an experienced welder. It could not be put in the hands of any man, because when a man was working on a plate $\frac{3}{32}$ in. it was so easy to go through; it was not the danger of escaping gas, or fire, or anything of that kind, but damage that would be done.

Mr. PLATT (Bolton) proposed a vote of thanks to the Author, which was seconded by Mr. SPEERS (Preston) and carried with enthusiasm.

The Institution of Gas Engineers

Members of The Institution of Gas Engineers will be welcome at the Sixteenth Annual Corporate Meeting of the Institution of Chemical Engineers on Friday, Feb. 18. 1938, at 11.45 a.m., at the Hotel Victoria, Northumberland Avenue, London, W.C. 2.

At 2.15 p.m. a Paper will be read by Mr. H. J. Bush, M.Sc., Ph.D., on "Some Applications of Electrical Precipitation to Industrial Effluent Gases."

1938 Examinations

The Examinations of The Institution of Gas Engineers in Gas Engineering (Manufacture) will be held on April 30 and in Gas Engineering (Supply) on May 7. The Oral Examinations will be held in London on June 29.

Forms of Application for External Candidates can be obtained from the Secretary of the Institution and have to be returned to him not later than Feb. 28.

The last date for receipt of examination results in ancillary subjects is May 28. Publication of the results of Examinations will be made on July 20.

Candidates for the Diploma Examinations in Gas Engineering (Manufacture) and Gas Engineering (Supply) are eligible for the award of the Charles Hunt Memorial Medals.

The Diploma in Gas Engineering (Manufacture) or (Supply) and the Higher Grade Certificate in Gas Engineering (Manufacture) or (Supply) will admit to Corporate Membership, and the Ordinary Grade Certificate in Gas Engineering (Manufacture) or (Supply) to Studentship of the Institution, provided the other conditions stated in the By-Laws are fulfilled.

Forms of Application for Admission to the Institution and copies of the Royal Charter and By-Laws can be obtained from the Secretary of the Institution, 1, Grosvenor Place, London, S.W. 1.

Gas Undertakings' Results

Cardiff.

The balance on Revenue Account for the past year of the Cardiff Gas Light and Coke Company is within a few pounds of that for 1936, and the dividend on the consolidated ordinary stock is maintained at the rate of 6% per annum. The capital expenditure during the past twelve months was confined to new mains and meters, and there is still a small balance on Capital Account. Included in the expenditure on Revenue Account are items of £3,478 for superannuation pensions and allowances and £6,768 for employees' co-partnership. The quantity of gas sold to private consumers was 7,808,709 therms. The Directors have had under consideration the Company's investments of reserve and other funds, and in order to conserve existing market values and to ensure full capital realization in the future, investments in Consols, War Stock, and Conversion Loan have been transferred to 3% Funding Stock 1959-69. The Cardiff Gas Company is one of those who draw the attention of stockholders to the advantages obtained—*i.e.*, saving of trouble and expense, and considerable additional security—by instructing the Company to pay dividends and interest direct to a bank.

Cheltenham and District.

A record in the history of the Cheltenham and District Gas Company has also been established by an increase last year in the quantity of gas sold to consumers throughout their area to 715,854,100 cu.ft., or 19,094,300 cu.ft. more than in 1936. Of a capital expenditure during the year of £28,965, practically one-half was on new buildings and plant connected with manufacture. The re-conditioning of the vertical retorts which was in progress at the date of the last report has been completed, and a waste-heat boiler installed as an addition to the scheme. Out of the profit of £21,665 (against £25,041 a year ago), a dividend is to be paid at the rate of 5% per annum on the paid-up consolidated ordinary stock of the Company, and appropriations are to be made in accordance with the Cheltenham and District Gas Order, 1935, of £28 to the Reserve Fund and £28 to the Employees' Benefit Fund.

Croydon.

The annual meeting of the Croydon Gas Company will be reported in the "JOURNAL" next week. Meanwhile, it may be stated that the Directors will report a small increase in the sale of gas during 1937 over the previous year, and the addition of 2,203 new consumers, making the total number 103,315. Consequent upon the satisfactory results obtained in the Oxted and Limpsfield area, a reduction in the price of gas of 1d. per therm was made from the beginning of April; the price in that area being now 11d. per therm. The Capital Account shows that during the year there was spent on land, buildings, manufacturing plant, &c., the sum of £25,882, and on new mains and other works connected with distribution £29,138. The balance of profit carried to Net Revenue Account is £191,846, which compares with £169,533 a year ago. The total quantity of gas sold was 16,422,891 therms, as against an amount of 16,363,847 therms in 1936. After payment of the preference dividend and dividends for the year of 5% on the maximum dividend stock and of 7% on the sliding-scale stock, providing for all fixed charges, appropriating £15,000 to the Pension Fund, £5,000 to the Insurance Fund, and £20,000 to the Renewal Fund, there will be a sum of £54,959 to be carried forward to the next accounts. Approval will be asked of an application to the Board of Trade for a Special Order to authorize an increase of capital powers, and for other purposes.

East Hull.

The Revenue Account of the East Hull Gas Company for 1937 after the transfer of £1,000 to the Renewal Fund, shows a profit for the year of £21,081. Adding the balance of £2,582 brought forward from the previous year, makes a total of £23,663, which compares with a total of £24,449 for 1936, when a balance of £1,745 was brought in, and £2,000 had been transferred to the Renewal Fund. After making provision for fixed charges income-tax, and dividend for the six months to June 30, the Profit and Loss Account shows a balance of £8,557, and after the payment again of a dividend at the rate of 5% per annum on the ordinary stock for the half-year to December, there will remain a balance of £1,235 to be carried to the next account. The report, as usual, furnishes some figures relating to the year's operations. It appears that capital expenditure on 6·43 miles of new main amounted to £4,427. There were 2,236 additional gas appliances —cookers, water heaters, fires, &c.—sold or hired, and a further 474 meters (making the total number 24,510) were fixed. The number of public lamps is 2,318. Sales of gas went up slightly; the quantity sold during the year being 2,607,206 therms (579,379,200 cu.ft.), an increase of 0·95% as compared with the previous year, which in its turn registered an increase in sales of 0·61% over 1935. The proprietors will also be gratified to learn that the special terms quoted to industrial consumers are encouraging the greater use of the gas service.

Gloucester.

The increase in the sale of gas for 1937 reported by the Gloucester Gas Light Company is 0·46%, or 2,784,600 cu.ft. (12,948 therms), bringing the total sales to 611,125,300 cu.ft. (2,841,733 therms). The Directors recommend the payment of a dividend on the consolidated ordinary stock at the rate of 5% per annum, and that the sum of £351 be carried to the Reserve Fund, in accordance with the Gloucester Gas Order, 1935. The balance of revenue carried to Profit and Loss Account is £20,192, which compares with £18,753 a year ago.

Ipswich.

A slight decrease in output is recorded by the Ipswich Gas Light Company, and the profit on Revenue Account is £600 down. The payment again of a dividend of 6½% per annum on the consolidated stock will leave a balance of £26,104 to be carried forward. This is £1,000 more than last year. The quantity of gas sold to private consumers was 4,032,067 therms, and for public lighting and under contracts 24,697 therms.

Malton.

A slight decrease in consumption of just over 0·5% is attributed by the Directors of the Malton Gas Company to a large extent to the mild weather in the autumn. However, the profit, at £3,784, is about £80 more than for 1936. The Company have had to face considerable increases in the price of coal and materials, and the Board point out that if these continue to rise it may be necessary to consider an increase in the price of gas. Meanwhile, everything is being kept up to date; the showrooms and offices having been re-modelled and enlarged. Although the receipts from gas are less, the amounts received for coke, tar, and fittings all show increases. With the balance of £6,202 brought forward from the last accounts, there is an amount available for dividend, after paying income-tax and the interim dividend of 6¼% free of tax, which absorbed £1,500, of £7,988. The Directors recommend the payment of a final dividend of 6¼%, free from deduction of income-tax, which will again amount to £1,500, and will leave the sum of £6,488 to be carried forward. For the last half of 1936 (hitherto the accounts have been issued half-yearly) the dividend was 6¼%, tax free.

Newmarket.

The Newmarket Gas Company are able to report an increase in the sale of gas during the past year of 1·6% over the previous twelve months. There was no expenditure on Capital Account during 1937, and there still remains a balance in hand of £3,775. The profit earned during the year was £5,008, and with the amount brought forward there is a balance at the credit of Profit and Loss Account of £15,705, out of which the Directors recommend the payment of a dividend at the rate of 8½% (less income-tax) upon the £65,000 of original consolidated stock of the Company. The many uses for which gas is so eminently suited from the domestic point of view are stressed in a leaflet enclosed with the report. Readers will recall that the Company have just celebrated their centenary (see "JOURNAL," Nov. 17, 1937, p. 578; Dec. 1, p. 737), gas having been introduced to the town in 1937 by John Malam.

Portsmouth and Gosport.

The Directors of the Portsmouth and Gosport Gas Company are able to report for 1937 sales of gas considerably in excess of those of the previous year; the receipts from this source being up by about £4,000, at £445,222. The number of consumers and the number of appliances in use also exhibit a satisfactory increase. The expenditure to Dec. 31 is shown in the Capital Account as £1,488,480, while the net receipts total £1,409,575. A contract amounting to nearly £73,000 has been entered into for the replacement of the horizontal retort bench at the Hilsea Works by an intermittent vertical installation, and it is hoped that this plant will be ready for use in the early part of next year. In these circumstances additional share and loan capital is required, in order to provide for the continuing growth of the Company, and the Board are asking the proprietors to sanction the creation and issue of that portion of the authorized share and loan capital for which approval has not already been given by them. The payment of the dividends recommended for the year of 5% on the 5% maximum stock and of 8½% on the consolidated stock, both

less income-tax, will leave a sum to be carried forward of £49,167. The fees of the Directors are at approximately the figure at which they stood in 1925; and in view of the fact that the business of the Company has increased by over 40% since that date, the proprietors are being asked to increase the present annual remuneration by the sum of £500. The increased return from residuals nearly balances the extra expenditure on Revenue Account, the balance carried to Profit and Loss Account being a few hundred pounds up on 1936. The Balance-Sheet shows a sum of just over £100,000 on Hire-Purchase Suspense Account. This Company also drew the attention of proprietors to the fact that, by having their dividends paid direct to the bank, they will save themselves trouble and the Company expense.

Reading.

There has been an increase during the past year of 680 consumers in the area of supply of the Reading Gas Company, and altogether the business has been satisfactory. Owing, however, to successive increases in the cost of coal and other materials used in the manufacture and distribution of gas, together with a further advance in wages, it was necessary to make an increase in the price of gas as from the Michaelmas meter readings. The quantity of gas sold, used on works, &c., was 1,465,399,400 cu.ft., or 6,740,837 therms. The net addition to the capital expenditure last year was £7,500, which reduces the balance to £5,474. During March £15,100 of 6½% preference stock was redeemed, and at the same time an issue was made of £15,000 of 4% redeemable preference stock, 1952-57, the majority of the holders of the former stock taking the new in substitution. The payment of dividends at the statutory rates is recommended.

Shanklin and Ventnor.

The Shanklin and Ventnor Gas Company and the Sandown Gas and Coke Company, Ltd., were last October amalgamated, under a Special Order by the Board of Trade, and the name was changed to the East Wight Gas Company. It was stated in the "JOURNAL" dated Oct. 6 (p. 58) that the manufacture of gas at the Sandown Works had ceased, and since that time all gas supplied by the Company has been made at the Shanklin Works. A 6-in. high-pressure main has been laid between the two works. Consequent upon the amalgamation, the accounts for 1937 comprise the results of nine months' working of the Shanklin and Ventnor Company, and three months of the East Wight Company. There has been an increase in the sale of gas, as compared with 1936, in all districts, the quantity sold having been 625,036 therms. On one side of the Balance-Sheet there appears a bank overdraft of £16,202, while on the other side there is a balance at debit of Capital Account amounting to £508, while stoves on hire and on hire-purchase figure at £9,426. On the £79,904 of original ordinary stock a dividend of 8% for the year is being paid, while the £39,600 of stock allotted to the Sandown proprietors receives 2% for the three months.

South Suburban.

The report to be submitted by the Directors at the annual meeting of the South Suburban Gas Company (a full report of the proceedings of which will appear in next week's issue of the "JOURNAL") states that the quantity of gas sold during the year 1937 shows an increase of slightly over 0·25%, or of 0·6% if allowance is made for the extra day in 1936, which was Leap Year. The total quantity of gas charged was 25,956,731 therms; the quantity sent out including practically 3,000,000 therms purchased from the South Metropolitan Gas Company. The balance outstanding for hire-purchase of stoves and fittings is £258,963. Balance carried to Net Revenue Account is up by about £9,000, at £211,963, and the dividend is maintained at 6%, which will leave the sum of £21,582 to be carried forward to the next account. The Directors regret that, owing to substantial advances in wages and cost of materials, it has been found necessary to increase the price of gas by four-tenths of a penny per therm from the first reading of meters this year. It is gratifying to note an addition of 5,703 to the consumers; the total number of consumers now supplied by the Company approximating to 200,000. The demand for gas appliances has been well maintained. Continued ill-health unhappily obliged Dr. Carpenter to resign from the Chairmanship of the Company in the early part of last year. His place has been taken by Mr. Frank H. Jones.

Tottenham and District.

An extended account of the proceedings at yesterday's annual general meeting of the Tottenham and District Gas Company will be given in next week's issue of the "JOURNAL." The Directors reported that the sales of gas in 1937 showed a satisfactory increase over the previous year, while the number of new consumers connected to the mains was 2,679. Actually, the total sales were 22,407,475 therms, as compared with 21,952,190 therms in 1936. The number of public lamps increased from 10,418 to 10,706. After the payment of the preference dividends and a dividend on the ordinary stock at the full statutory rate of 6½% per annum, less income-tax, providing for interest, transferring the sum of £16,714 to the Renewals Fund and £1,000 to a Capital Redemption Fund, the accounts for the year show that the carry-forward has been increased by the sum of £2,471, and is now £57,014. The expenditure on Revenue Account for the year was about £25,000 up, but a gain of some £35,000 in the returns from residual products brought up the receipts from £1,182,362 to £1,210,096. In the result, the balance carried to Profit and Loss Account was increased from £139,323 to £142,548. There is a balance at credit of Capital Account of £187,219, while on the other side of the Balance-Sheet hire-purchase instalments not yet due (less reserve) figure at £155,854, as against £108,009 a year ago. Last month the Board of Trade held an enquiry relative to the Company's application for an Order to sanction amalgamation with the Southgate and District Gas Company in accordance with an agreement entered into, and to alter the constitution of the Tottenham Company from a standard dividend company to a basic price company. The report mentioned that the wages of the employees, which had been increased by ½d. per hour in July, 1936, were last August again advanced by a similar amount.

Wandsworth and District.

Another undertaking whose meeting will be reported fully in the next number of the "JOURNAL" is the Wandsworth and District Gas Company. The accounts presented showed that the total quantity of gas sold in 1937 was greater than in the previous year—31,328,024 therms, as compared with 29,594,397 therms. Of the seven areas among which the sales are divided up, Wimbledon accounts for 10,090,168 therms, Wandsworth following with 6,795,277 therms. The five other districts are Epsom, Kingston, Sutton, Leatherhead, and Walton-on-Thames. In the twelve months the number of public lamps supplied has grown from 6,892 to 7,550, the number of consumers has increased by 6,653, and the total of stoves and other appliances by 33,404. After meeting prior charges, the Directors recommended again a dividend of 7% on the consolidated stock, which would permit of the allocation of the sum of £27,422 (as compared with £26,963 a year ago) to the employee co-partners. The net expenditure on Capital Account during the year was £149,539, of which £59,067 was on buildings and plant, £76,252 on mains and services, £47,290 on meters, stoves, &c., and £42,725 on ships. There is still a balance of capital of £479,705, and the Company received Parliamentary sanction last year to the raising of further money to meet the needs of their growing business. Receipts for gas and for residuals were well up on the year, and though coal on works cost some £40,000 more, the balance carried to Profit and Loss Account increased from £268,422 to £280,377. The hire-purchase account, less reserve, figures in the Balance-Sheet at £333,989, as compared with £325,077 a year ago, while on the other side the temporary loan from bankers has been doubled at £300,000.

Weston-super-Mare and District.

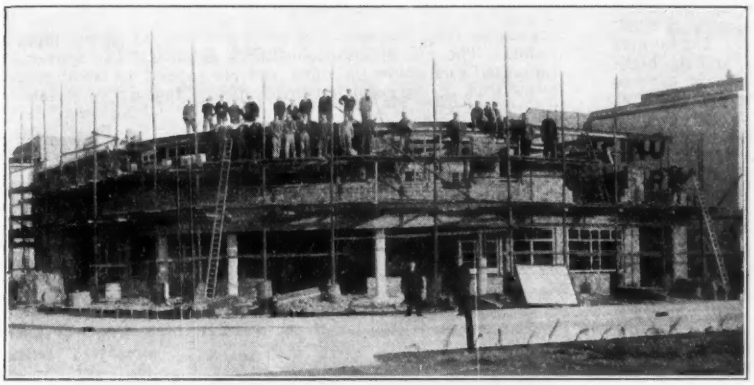
New carbonizing plant at the Weston Works of the Weston-super-Mare and District Gas Company was put into operation last July, and the Directors report that the results are satisfactory. In the same month gas making was discontinued at the Burnham and Highbridge Works, on the completion of the laying of a gas main from Weston to those districts. Expenditure on Carbonizing Plant, &c., Replacement Account amounts to £67,181, and towards meeting this, a first instalment of £10,000 is transferred from Profit and Loss Account. There is a balance of £26,734 on Capital Account, and a bank overdraft of £42,700. The Directors report that the sales of gas for 1937 show an increase of half-a-million cu.ft. over the previous year, and the balance of revenue carried to Profit and Loss Account is £28,259, as compared with £20,408 for 1936. The dividend upon the consolidated ordinary stock is at the maximum rate of 5%.

Woking District.

An increase for 1937 of 3% in the amount of gas sold, and of 376 in the number of consumers is reported by the Directors of the Woking District Gas Company. The total quantity of gas sold was 1,133,688 therms. In the Capital Account over £10,000 was spent during the year on new mains, and, in addition, £9,630 appears in the Revenue Account for repairs, renewal, and replacement of mains and service pipes. As a matter of fact, during the year exceptional expenditure on renewals was incurred, especially upon trunk mains, and the Directors have debited this expense against the revenue of the year. A recurrence of such exceptional expenditure is not anticipated. The profit on Revenue Account is £11,832, which compares with £15,376 for 1936. The payment of the same dividends for the year of 11% on the "A" ordinary stock and £7 14s.% on the "B" ordinary stock will leave an amount of £1,682 to be carried forward, as against £6,429 brought in. There is a balance of £541 at credit of Capital Account, and the Balance-Sheet shows a temporary loan from bankers of £22,000.

"REX" BOILERS

for Central Heating and Hot Water Supply at the Hotel Monico, Canvey Island



The Hotel Monico, Canvey, is being constructed by Mr. A. H. Beaumont (who is well known to the Gas Industry) following the building of "The Casino" which has had a most successful career under his ownership and control since 1934.

For warming the Hotel a No. 1 Series "Rex" Boiler of 6 sections has been installed which heats 25 Radiators containing 1,000 sq. ft. nett direct surface.

For Hot Water Supply, a "Rex" 'D' Series 4-Section Gas Water Heater is installed, with a storage of 300 galls. capacity in twin cylinders of 150 galls. each, so arranged with cut-out that one or both can be used according to demand. This supplies hot water to hand basins in each bedroom, bathrooms, public lavatories, culinary sinks and bar wells.

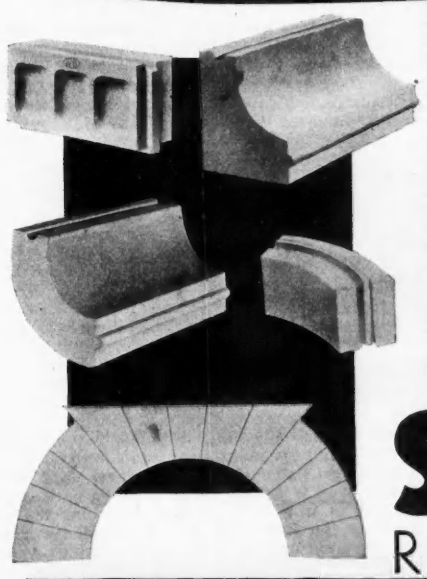
A "REX" boiler is being exhibited on The British Gas Federation Stand at The British Industries Fair, Birmingham, Stand Nos. Ca 306, 407, 508, 609.

THOMAS POTTERTON (HEATING ENGINEERS) LTD.,

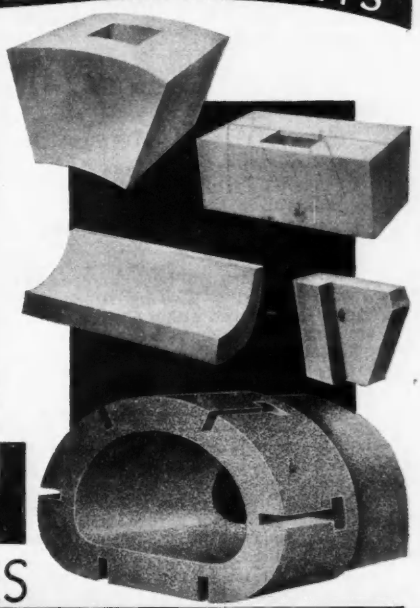
'Phone: BALham: 1244-5-6 **Cavendish Works, Balham, London, S.W.12** 'Grams: Potterton, Toot, London

SPECIAL SHAPES

FOR HORIZONTAL & VERTICAL GAS RETORTS



THE high standard of finish, accuracy of size, and degree of burning, which are characteristic of "BLUEBELL" (95% silica) special shapes for vertical and horizontal retorts, as also of "THISTLE" fireclay mouthpieces, etc. is fully maintained by the control which is a feature of their manufacture.



STEIN REFRACTORIES

JOHN G. STEIN & C° LTD *Bonnybridge Scotland*

DEVELOPMENTS

RADIATION "NEW WORLD" PRODUCTIONS

IN

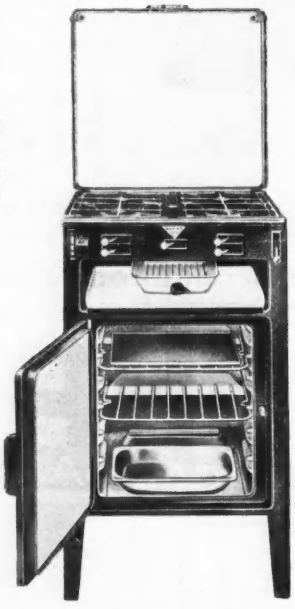
COOKER DESIGN

Cabinet Cooker 365

Important technical advances are embodied in a new cooker—the "New World" Cabinet Cooker 365—which has been developed by Radiation Ltd. It is thoroughly modern in appearance, as our photographs clearly demonstrate. One high-speed boiling burner of 14,000 B.Th.U. per hour capacity (*i.e.*, 28 cu.ft./hr. of 500 B.Th.U. gas), and three other boiling burners of 9,000 B.Th.U. per hour capacity (18 cu.ft./hr.) are provided. The burners are well spaced for all types of cooking operations, and the high-capacity burner is capable of boiling one pint of water in 125 seconds.

All hotplate burners are of the non-lighting back type. Their effectiveness may be demonstrated by introducing a flame at the air port, which may be done without causing lighting of the gas at the injector. The chokes of these burners are all carefully machined to close dimensional limits and a system of invariable injector orifices has been adopted which will simplify considerably the installation adjustments required, and ensure the efficient operation of the appliance at all times.

"New World" 365 in Closed Position.



The Oven Interior of the 365.

Hotplate utensils are supported on novel trough-shaped castings which are designed to collect accidental spillage and to give an attractive closed appearance to the hotplate. These troughs will retain up to half a pint of liquid. A considerable contribution to the pan stability of the hotplate is made by four cruciform members, one fitted above each burner. The smallest vessels in common use are adequately supported.

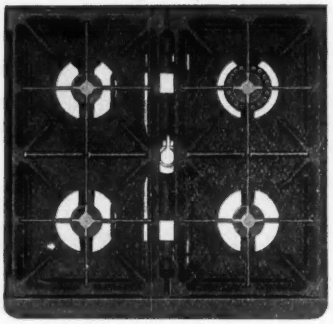
The grill is mounted below the hotplate troughs and is further protected by a cover casting. It is equipped with heat resisting steel frets which attain a working temperature very quickly. Toasting can be commenced within 60 seconds of lighting and the uniform area of toast produced amounts to 52 sq.in.

A fully automatic lighting device is housed on the bridge of the grill cover plate, adding to the utility of this novel and compact hotplate design. It is necessary only to turn on the gas tap and the appropriate burner is ignited. This is accomplished by the provision of a continuously burning pilot from which ignition tubes radiate to each of the hotplate burners. The pilot consumes only one-fifth of a cubic foot of gas per hour, and is intended to remain permanently lighted.

A cover top is available which serves to enclose the hotplate completely, giving the cooker a very clean and compact appearance. A standard splash-plate and plate-rack can be supplied as an alternative if required.

The cooker taps are self-locking in the "off" position. These are grouped, complete with the "Regulo" setting visor, in a radio type control panel immediately below the hotplate level. In order to turn on one of the taps the operating knob is pulled outwards and the lever moved to the right.

The mechanical layout of the hotplate is interesting. The gas connexion from the service is concealed and no supply pipes are visible. The use of straps has been avoided. The burners are supported one above the other and are carried on small brackets at the back of the hotplate compartment. Ingenious hotplate taps have been devised for these pairs of boiling burners. These have been designed to incorporate two plugs in the single body and all seatings are sealed under spring pressure. Thus there are only three complete injectors for the five hotplate burners, the grill injector being of the Simplex type.



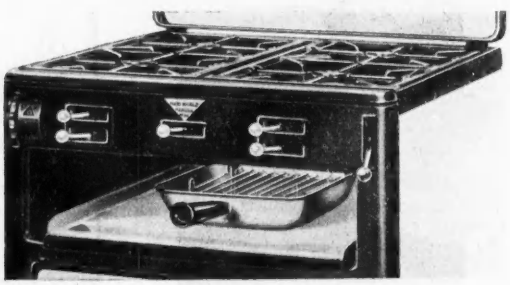
The Hotplate of the 365.

The oven is an advanced design on the well-established "New World" principle. The burner is now enclosed in a separate combustion chamber and a higher working efficiency is attained together with high quality of cooking. The oven will give uniform browning when cooking simultaneously two trays of scones, queen-cakes, biscuits, &c., and whole meals may be inserted at one time and withdrawn at the end of the appropriate time cooked to perfection. Fifty whole meal arrangements, with breakfast dishes additional, are available in the Radiation Cookery Book.

The oven grid design is unique. The shelves may be withdrawn to a fixed stop and supported in that position, or by means of an interesting peg device they may be lifted horizontally upwards and transferred to another runner level; tilting is avoided, and food may be moved without danger of spills.

A simple lighting device has been provided for the oven. This is so arranged that it is necessary merely to apply a light at the circular hole in the front of the bottom-plate to ensure ignition of the oven burner.

The interior of the oven is round-cornered throughout, making it very easy to clean. It is fully porcelain enamelled and the bottom-plate is lagged. The oven compartment is totally enclosed.



The Control Panel of the 365 "New World."

The "Regulo" employed is entirely new. The valve is easily removable for cleaning or inspection without disturbing the setting of the instrument. To meet this requirement the exterior right-hand panel of the oven can be withdrawn, by which means the valve is exposed.

The venting arrangement of the oven has been so designed that it may either be connected to a flue, in which case an attachment is made at the bottom of the back, or if it is desired that the appliance be pushed flush to the wall there is a space for air flow up

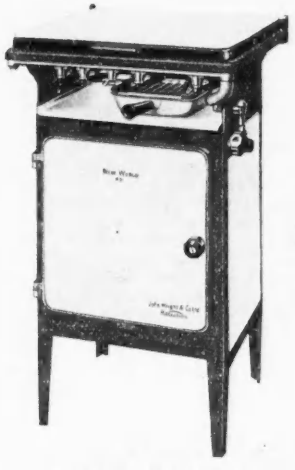
the back, when the products discharge through a cowl into the hotplate compartment.

The hotplate components, the front, door frame, and legs are finished in ebony vitreous enamel and the panels of the appliance are white. The door is flush with the front of the cooker and is provided with concealed hinges which are fully adjustable in two directions to ensure satisfactory bedding. The handle is insulated against overheating and is new in design, sliding upwards to release and downwards on to a key-way for locking purposes.

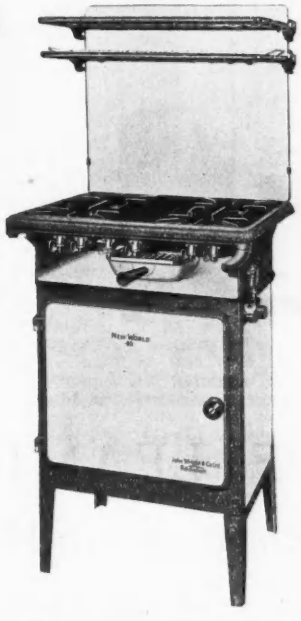
The general construction is sturdy. All heavy duty components are of cast iron consistent with the long observed policy of providing for the public really durable gas apparatus.

Cookers Nos. 45 and 48

Two new cookers, Nos. 45 and 48, have been developed on lines similar to the Cabinet No. 365. They are available with a full range of non-lighting back burners, and the hotplate features have been developed to align the hotplate appearance with that of the No. 365 cooker. The new appliances have sheet enamel exterior sides, are of robust construction, cast iron in the vulnerable parts, and generally neat in appearance.



"New World" No. 45.



"New World" No. 48.

The boiling burners available for the new hotplates are of the following denominations: The short shank burners are of 9,000 B.Th.U. per hour capacity—*i.e.*, 18 cu.ft. of 500 B.Th.U. gas. The left-hand long shank burner is similar to the high speed boiling burner of the Cabinet hotplate, and consumes 14,000 B.Th.U. per hour, or 28 cu.ft. The right-hand long shank burner is of 7,500 B.Th.U. per hour, or 15 cu.ft., capacity.

The new solid tops are of clean appearance and give improved pan stability. They afford effective protection of the grill and other hotplate parts.

As with the 365, the grill is equipped with heat-resisting steel frets, and the push button automatic system of hotplate ignition has been adopted.

All hotplate taps are provided with handles which are insulated against overheating, and the cookers are marketed alternatively with a platerack or a hinged cover top.

The ovens of these cookers are of the single burner type and are suitable for whole meal cookery as outlined in the Radiation Cookery Book. They give a high standard of uniformity with smalls. The doors are constructed with light cast-iron frames and are of much improved appearance. All supply pipes are concealed and the simple lighting device has been provided.

These appliances are attractively finished in Radar grey enamel with flush white vitreous enamelled panelling.

Isle of Thanet Children's Party.

About seventy children of the employees of the Isle of Thanet Gas Light and Coke Company were entertained at the Company's Demonstration Room by the Company's Sports Club.

Among those present was Major Allan Leach Lewis, a Director of the Company.

Athletic and Social

Chesterfield Dinner.

The annual dinner of Chesterfield Gas Department was recently held at the Station Hotel, Chesterfield. The gathering of eighty included Alderman G. Clark (Chairman of the Gas Committee), Alderman A. W. Swale (Vice-Chairman), and Mr. H. Davies (Engineer and Manager) and Mrs. Davies.

It was mentioned by Alderman Clark, who proposed "The Gas Department," that he had been Chairman since 1913. The output of gas then was 186 million cu.ft. Last year it was 585 million cu.ft. Street lamps had increased from 539 to 1,781.

An entertainment followed by members of the Department. Arrangements were made by Mr. G. Britchfield, and Mr. E. Longbottom (Sales Manager) was M.C.

Kidderminster Cricket Celebration Dinner.

Reference to the Kidderminster Gas Company as pioneers in the town of pensions schemes and life insurance for its workpeople was made by Mr. A. Howe (Assistant Secretary of the Company) at a dinner at the Lion Hotel on Jan. 29. He mentioned the kindly feeling always shown by Directors towards employees, and of their desire to improve recreational facilities.

The occasion was a celebration of the Gas Company's team's success in winning the championship of the Kidderminster and District Cricket League (Division II.b). Several speakers referred to their sportsmanship and the team spirit displayed on the field of play, and it was stated that success had been achieved without the superior facilities and greater numbers to draw from, which were possessed by other firms in the town.

Mr. J. Brereton, Chairman of Committee, presided over a large attendance, which included Messrs. E. E. Mumford, W. Johnson, and Fred W. Yates (Kidderminster and District Cricket League), with the captain and secretary of the club, Messrs. P. J. Grealy and H. J. Hanglin.

General Gas Appliances Staff Dinner.

The Annual Staff Dinner of General Gas Appliances, Ltd., was held at the "Highland Laddie" Hotel, Ashton-under-Lyne, on Feb. 4. Mr. F. Mileson (Works Manager) presided, and the Directors and Secretary were among the guests.

The Staff at Dinner.

Mr. H. Artingstall proposed the Toast of the Firm, which was responded to by Mr. W. R. Francis (Joint Managing Director), while the Toast of the visitors was given by Mr. S. C. Whitfield (Joint Managing Director). Reference was made to the progress of the firm since its inception, and high tribute was paid to the loyalty and enthusiasm of the staff in bringing the Company to its present position.

Members of the staff subsequently contributed to the enjoyment of the evening. Miss Dorothy Browne wrote a monologue of the Stanley Holloway type which was rendered by Mr. Tom Challenger in true Lancashire dialect. Mr. C. H. Gilbert sang two songs, and Mr. C. L. Bury entertained with humorous stories and songs. A vote of thanks to the Chairman and Committee for the excellent manner in which the programme had been arranged was proposed by Mr. S. F. Corby (Director), who expressed the hope that it would be the forerunner of many similar occasions.

FLAVELS OF LEAMINGTON extend a hearty invitation to all friends in the Industry to visit them at their Stand No. Ca. 507-406 in the British Industries Fair.

Among other new appliances, a modern Gas Cooker, streamlined in pressed steel, is featured.

The New FLAVEL "37" Gas Cooker

COMPANY MEETING

The South Metropolitan Gas Company

The Ordinary General Meeting of the Proprietors of the South Metropolitan Gas Company was held at Southern House, Cannon Street, E.C. 4, on Wednesday, Feb. 9, under the Chairmanship of Mr. FRANK H. JONES, M.Inst.C.E., the President.

The SECRETARY (Mr. F. G. Brewer) read the advertisement convening the meeting, and the seal of the Company was affixed to the Register of Proprietors.

PRESIDENT'S ADDRESS.

The PRESIDENT: Ladies and Gentlemen,—The Report and Accounts have been in your hands for a week, and I shall therefore ask you to take them as read.

In the first place, it is, I know, a matter of deep regret to all of you that two faces, familiar at this table for nearly thirty years, are absent to-day. I am sorry to say that Dr. Carpenter has not made the progress we had hoped, and that he is far from well. You will, I am quite sure, wish me to send him and Mrs. Carpenter a message of greeting and sympathy.

The other whom we all miss is Mr. Frank Bush, who last year, a little later than this, passed away. By his death the Board have lost a loyal colleague, and the Company a shrewd and devoted guide. Frank Bush was incapable of misleading others, and I believe that he was equally incapable of being misled. There was something in his manner, springing from his whole being, which instinctively inspired confidence, and his gentleness, allied with firmness, when firmness was needed, seemed the key to unlock like qualities in others. As Secretary, and later as Director, he served the Company continuously and faithfully for fifty-five years. I myself have lost one of my oldest and greatest friends.

To succeed Mr. Bush the Directors asked Mr. Harold Murphy, K.C., to join them. He brings to their counsels a mind well trained in public and business affairs; and, as you all know from reading the papers, he has lately been carrying out a very important enquiry at Croydon. Another face new to you is that of Mr. A. Lee, elected by the Co-partners in place of Mr. Pinks, who has retired.

The Report.

To turn now to the Report, you will, I hope, agree that the results of the year have been satisfactory. The balance of profit is £214,747, which enables your Directors to recommend the payment of a dividend at the same rate as last year—that is, 5½%—and leaves £13,450 to be carried forward. The report also tells you that the number of consumers is the greatest in the Company's history, and that the gross sales of appliances installed on hire-purchase were £164,000 greater than in 1936, or an increase of 72%. Notwithstanding these facts, there has been a decrease in the quantity of gas sold. May I, however, remind you of some of the factors which go to explain this situation? The new apparatus installed carries with it greater efficiency, amounting to 10 or 15% in some instances; but there is often a greater saving than the increased efficiency of the appliance itself, for old methods have been displaced by new. For instance, it takes far less gas, as well as much less time, to draw hot water from one of the latest instantaneous water heaters than it does to heat water over a gas ring, as used to be the custom. The immediate result may, in fact, be a reduction, rather than an expansion, of total output for these particular purposes; but I am firmly convinced that this economy is a source of ultimate strength, and that in pursuing this policy the Industry is building for the future and consolidating its business on a firm and sure basis.

Low Capital and High Consumption.

There are two other facts to which I wish to draw your attention. Your Company has always been most provident and careful in the raising and use of its capital; its charge for capital per therm sold is, in fact, the lowest of the London Companies. On the other hand, its consumption per consumer is the highest of the London Companies, and I think I am correct in saying that its slot consumption per consumer is one of the highest in the country. The experience of the Industry in general has been decreased consumption per consumer, and with some of the social reasons which explain that decrease I shall deal later. But the fact remains that your Company continues ahead of others in its average consumption per consumer.

In the area of South London that we supply there are 136,000 less people resident than ten years ago. I may remind you that 1936 was a Leap Year, and that the absence of February 29th from last year's calendar accounts for no less than 0·34% of our decrease.

Confidence in the Future.

Here I wish to repeat what I have said before—that my confidence in the future of the Gas Industry and of our Company is complete. The past is useful only as it serves as a guide for the future, and in this spirit I should like briefly to recall just a few of the South Metropolitan's achievements.

In the introduction of the therm method of charge and the basic price and dividend system the Company was the pioneer. It was the first also to establish a complete system of coal testing and purchasing. And perhaps highest of all its achievements I should place the introduction of co-partnership, which has proved of such lasting and continuing benefit to consumers, employees, and shareholders alike. It is a great honour to succeed to the tradition of Livesey and Carpenter in co-partnership—an honour of which I am deeply sensible, and which it will be my best endeavour to uphold.

I have mentioned these few outstanding points in the Company's history, not in any complacency, but as a proof that my confidence in the future is based on a firm foundation, and I assure you that the spirit which has inspired the past is no less active to-day. The Board of Directors has placed into enlarged managerial positions officers of the Company who have been trained in its traditions, and in the standards of efficiency with which the name of the Company is associated. With them rests the responsibility for the day-to-day running of the Company's affairs, and they, and all under them, carry with them the complete confidence of the Board.

Changing Social Conditions.

I was dealing with the quantity of gas sold last year, and I mentioned the greater efficiency of the more recently designed apparatus, and the growth of our business in hire-purchase sales, which, incidentally, is reflected in the amount shown in the balance-sheet. Another factor which must necessarily influence sales of gas is the change still taking place in social conditions. We have to recognize as a fact that at present the old form of homely amusement is being displaced by motor cars and entertainment in cinema, restaurant, &c. This has had a very large effect on gas sales, not only in your Company but elsewhere. I am one of those who think that, with the greater comfort that is being offered in the new houses which are now being put up so rapidly and in such large numbers, and with the amenities that will be increasingly provided, the home will again come into its own as the natural meeting place of family and friends. And here I should like to pay my tribute to the design of the buildings and flats which the London County Council and other municipal authorities, as well as private builders, are erecting. A tour through the Company's area will show you some excellent examples of what I have in mind.

I shall say no more about electrical competition than to assure you that it only provides an added stimulus to our endeavours.

Central Heating Contracts.

Sales of gas for industry have made further advance and are now just over 11% of our output. For central heating, ease and steadiness of control, cleanliness, and economy of space and labour are points which appeal to the modern builder, and on all these scores gas can and does outdistance its competitors. The Company has been successful in securing a number of contracts for this class of business.

As the Accounts show, it has been a good year for products—especially coke—and the revenue from these sources has been of direct benefit to gas consumers by helping to postpone any increase in the price of gas. It illustrates not only the claims of gas to be an economic method of treating coal, but also the advantages which the Industry, by spreading its costs over a

number of markets, offers to its customers, industrial and domestic, in a greater stability of price, so far as stability can be attained.

A Necessary Increase.

Products helped us to defer a change of price, but at last the cumulative rise in the costs of labour, in consequence of national industrial awards, and in the price of materials reached a stage when an increase could no longer be postponed. The Directors therefore decided to increase the price of gas from January 1st by four-tenths of a penny per therm, or 4·4% in our case, which is well below the general increase of prices. An increase of price is the last thing any business desires, least of all a public utility whose dividends are controlled by Parliament; but, as I have said, conditions made an increase inevitable. The causes and the propriety of the increase are, I believe, generally understood.

The Coal Question.

Coal is still a subject of great anxiety to us. We have every desire that the miners should receive an adequate wage and the colliery shareholders an adequate return on their capital. Our sympathy has, in fact, been shown in the practical form of the voluntary payment of an extra 1s. a ton on coal delivered to us under contracts made before January, 1936, in addition to considerably enhanced prices in contracts made after that date. But we dread the thought of being placed in the hands of a virtual monopoly with licence to dictate both the price and the quality of our raw material, or, as an alternative, being compelled to appeal to committees endowed with bureaucratic powers to settle our business affairs. We are under statutory obligation to supply gas and are answerable to Parliament for the manner in which we discharge our obligation. Surely the case is overwhelming that an industry which is still more basic in the sense that it controls the raw material of almost all others should be placed under control much more effectual than is intended by the present proposals of the Government. We are fortunate in having as our adviser Major Bywater, who for many years has made an intimate study of the coal trade, and who, in association with the National Gas Council, of which we are now members, and other national bodies, will continue to watch our interests in this most important matter.

Committee on Gas Prices.

The next paragraph in the Report recalls that the Company appeared, with other members of the Gas Industry, before the Joint Select Committees on Gas Prices, who met under the able Chairmanship of Sir Alan Anderson. The Committee's Report is familiar to some of you, and I need say no more than that the Industry as a whole has every reason to be satisfied with it. Particularly gratifying to us was the fact that, while it criticized the method and details, but not the motive or justice, of our tariff, the Report was a complete vindication of the basic price and dividend system. The Company owed much, in that connexion and in many others, to the able advocacy of Mr. W. E. Tyldesley Jones, K.C., who represented the Company in many of its Parliamentary battles, and whose death has meant the loss of a wise and experienced counsellor.

More Gas Sold for Public Lighting.

Little remains to be said of the year's activities. The new "Supervia" installations ordered by Wandsworth and Lambeth have now been completed, save for a few streets in clearance areas in the latter borough, and while we have fewer miles lighted by low-pressure gas in consequence of the change-over to electricity in Camberwell, we have added to our high-pressure installations in other parts of South London, and the quantity of gas sold for public lighting last year was, in fact, nearly 5% greater than in 1936. [Applause.] On the distribution side, the Company, with new showrooms at Mottingham and Streatham, and in other ways, has endeavoured to anticipate the needs of modern salesmanship.

Earlier in this Address I referred to the managerial appointments made during the year. The names, and probably the men themselves, are well known to most of you, for they have been with the Company for many years, and have been well proved in its service. Mr. E. V. Evans has now been appointed General Manager, Mr. A. H. Andrews Chief Engineer and Works Manager, and Major F. J. Bywater Comptroller and District Manager. Mr. Evans has spent the whole of his business life in the service of the Company. Mr. Andrews joined the Company as long ago as 1914; and Major Bywater, who used to live in the North and helped to purchase the supplies of coal, has been with the Company since 1911, having come from the great gas undertaking of Birmingham. In his new position of Comptroller, Major Bywater will in future have control of the "money bags."

In conclusion, I cannot allow this, the first, year of my Presidency to pass without a personal word of appreciation of all the consideration and help which I have received. Of the staff, I hope you will allow me to say something a little later; but to my colleagues on the Board I should like to say: "Thank you for your very loyal and devoted support." To follow Dr. Carpenter is no easy task, but the path is made the smoother by the gentlemen whom you see supporting me to-day. Not least to the three Employee Directors would I express my gratitude, and I know that you will join with me in welcoming our latest recruit, Mr. Lee, who joins us young in years, but with a long training as a member, and later as Chairman, of the Elected Representatives on the Co-partnership Committee. [Applause.]

I now beg formally to move:

> "That the Report and Accounts now presented be received and adopted and the Report entered on the Minutes."

The VICE-PRESIDENT (Mr. A. M. Paddon, M.Inst.C.E.) having seconded the resolution,

The PRESIDENT said: If there are any questions, I will do my best to answer them. If there be none, I will put the motion to the meeting.

It was carried unanimously.

The Dividend Resolution.

Proposed by the PRESIDENT, and seconded by the VICE-PRESIDENT, it was resolved:

> "That the following dividends be now declared, viz.: On the 6% Preference Stock a dividend of 3% and on the 4% Preference Stock a dividend of 3% and on the 4% Preference Stock a dividend of 2% for the half-year ended 31st December, 1937; and on the Ordinary Stock a dividend of 3% making, with the interim dividend of 2½% paid in respect of the first half of the year, a dividend at the rate of 5½% per annum for the year ended 31st December, 1937, and that warrants be transmitted to the registered addresses of the Proprietors by post for the amounts of such dividends."

The PRESIDENT: I have now to move:

> "That Mr. B. R. Green and Mr. Harold Murphy, K.C., be re-elected Directors of this Company."

Mr. Green has, I believe, been a Director for about fourteen years, and from my close personal knowledge of him I would urge you to send him back to the Board table. Of Mr. Murphy I can only say that when Mr. Bush died we wanted another man like him—a man with common sense, knowledge, ability, kindliness, and sympathy, someone to whom we might turn when we wanted guidance. I know that Mr. Murphy possesses these qualifications.

Mr. A. LEE, at the request of the President, formally seconded the resolution, which was agreed to.

Mr. MURPHY, responding for Mr. Green and himself, assured the proprietors that in the future, as during the past year, he would do his best to serve the interests of the proprietors and those of the Company.

On the proposition of Mr. O. B. GREEN, seconded by Mr. R. V. DE B. CRAWSHAY, Mr. C. P. Crookenden, F.C.A., was reappointed an Auditor of the Company.

Acknowledgments.

The PRESIDENT: Only one other thing remains for me to do—and that is to ask you to accept my proposal that a very, very hearty vote of thanks should be accorded to the whole of the staff, and by staff I mean everybody in the service of the Company. Perhaps I am the best qualified person to tell you how well earned this vote of thanks will have been. It has not been an unusually easy year for me and my colleagues on the Board, and I can say without any hesitation that, had it not been for the loyal help of everybody in the Company, we could not have done what we have. Last year Dr. Charles Carpenter was removed from our deliberations, and then Mr. Frank Bush died. We were also faced with the Committee on Gas Prices, whose enquiry lasted for days. It was in times such as these that one recognized one's friends, and in asking you to pass this vote I am doing so in the most genuine and most whole-hearted way I can. If the staff had not been so loyal to the Company and to you, ladies and gentlemen, you would not have been receiving a 5½% dividend to-day. It has been honestly and properly earned by extra hard work on the part of everybody concerned. I should also like to thank all those present for having come to this meeting. I will ask for a seconder of the vote from the body of the hall.

A PROPRIETOR seconded the vote of thanks to the staff, which he said was thoroughly well deserved, and it was cordially passed.

Mr. E. V. EVANS, O.B.E., F.I.C.: I am a little diffident in acknowledging this vote, in case I should fail to express adequately the thanks of all the employees of the Company. May I therefore say simply, but most sincerely, that we are very appreciative of your commendation? The Company we serve is justly proud of its reputation, and we have every intention of helping the Directors, not only to maintain that reputation, but to increase it. ["Hear, hear."] Like the President, the co-partners of this Company have every confidence in the future of the Gas Industry and of the Company which they have the privilege to serve, and

they are greatly encouraged by the knowledge that their efforts have contributed towards the report that has been made to the shareholders to-day. I know that this message of appreciation, and the excellent manner in which it has been received, will be an incentive to them to make still greater efforts. [Applause.]

Colonel WOOLLEY: Before we separate, there still remains one other pleasant duty to perform. For many years, Mr. President, we have been accustomed to see Dr. Carpenter occupying the chair which you occupy to-day, and many of us are sad to think that he is no longer here, but that does not in any way prevent us from giving you our good wishes, or from expressing the hope that for many years you may be spared to preside over this great Company. To your colleagues, also, I am sure the proprietors would wish to extend their best wishes in these difficult times. The Gas Industry has many problems to solve, and we should like to send you back to your work this year with the hearty good wishes of the proprietors behind you, and to thank you for all you have done for us in the past year. I propose a very hearty vote of thanks to the President and his colleagues on the Board.

Mr. CRAWSHAY seconded the vote, which was carried with applause.

The PRESIDENT: On behalf of my colleagues and myself, I thank you very much indeed for that expression of your confidence. I suppose when Directors come before shareholders to give an account of their stewardship, they always do so with a feeling of apprehension that someone may be inclined to say unpleasant things; but so far as my knowledge goes nothing of that kind has happened in the case of this Company, and it certainly has not happened to-day, so that we go away with still greater confidence. In moving this vote of thanks, Colonel Woolley remarked that times are difficult, but the position seems to be smoother now than it has been for some time. However, should any fresh difficulties arise I and my colleagues would know that we had the staff of the Company to rely upon for assistance.

Newcastle's Growing Industrial Demand

The growing use of gas as an industrial fuel was the subject of an interesting article in the *Tyneside Industrial Review* for 1938, issued this month. The following extracts show what enormous strides are being made by the Newcastle-upon-Tyne and Gateshead Gas Company in developing the industrial load. It may be mentioned that 2,000 million cu.ft. of gas is consumed yearly by Tyne industries.

Economic justification is obviously a prime necessity for the progress of any industry or the sale of any commodity in such an area as Tyneside. It has been at all times the policy of the Newcastle and Gateshead Gas Company to offer gas at a price which would be economic and, therefore, attractive to the industries operating within its area of supply.

One has not far to look to find the rewards of this policy. To such an extent has the use of gas for industrial fuel purposes grown in the Tyneside area that there are now few trades in which gas is not an important factor. In a great many it is indeed a vital one. This is strikingly illustrated by the fact that of the total gas produced on the Company's area, more than one-third finds it way into industry in one form or another.

This quantity is daily growing, and the expansion is largely due to the special facilities offered to industrialists in the form of highly attractive tariffs, which place the Newcastle Company in the forefront, since they represent one of the cheapest supplies in the country.

Much work of special interest has been undertaken. Particular attention has been given, for instance, to the requirements of the processes associated with non-ferrous metals. Very large quantities of gas are now used for melting, extruding, and the annealing of extruded sections, for the rolling and annealing of brass sheets, and for the annealing of cold drawn brass work. In three works alone these processes are responsible for a consumption of more than 150 million cu.ft. of gas per annum.

In the process of extrusion, the risk of ingot-burning is entirely eliminated by the control of temperature in conjunction with a means of heating other than by direct flame contact. The work is, in consequence, much cleaner; and, as in annealing, it is better and more uniform. Much the same is true of the rolling and annealing of non-ferrous sheets. In this work, the ability to maintain absolutely uniform temperatures throughout the gas furnace hearth makes it possible to roll the thinnest sheets with the certainty that they will be true to gauge over their entire surface. Again, in the annealing of sheets and cold-drawn work, it has been possible to reduce pickling costs to a negligible amount by controlled atmosphere conditions. There has been, moreover, a substantial reduction in the maintenance cost of press tools, for the same reason.

It is not only in engineering that gas finds a useful industrial outlet. Practically every trade requiring process heating can employ gas with advantage. An example is provided by the foodstuffs industries. Gas is very commonly used in the heating processes of foodstuff factories, and particularly in bread-making plants. In the area, served by the Newcastle Company, there are two bakeries using gas-firing exclusively which have a combined output of 15,000,000 loaves per annum, as well as cakes to the value of more than £100,000.

The soap industry provides another example. One factory has an output of more than 7,000,000 packages of soap per annum. It is claimed that this is the largest gas-fired soap-drying plant in the country.

The glass industry on Tyneside consumes more than 300 million cu.ft. per annum. Messrs. Geo. Davidson & Co., Ltd., for example, depend entirely upon gas for the manufacture of their ware, in the production of which they consume gas in quantity equal to the total demands of a town of 40,000 inhabitants.

In the latest of local developments—the North-Eastern Trading Estate—gas is already playing an important part. In anticipation of future requirements a special gas main has been laid from the Redheugh Gas-Works to the Estate, while within the Estate 80% of those factories now in operation are taking gas from large specially installed mains which circuit the Estate.

Discussion on Road Safety

On Tuesday, March 1, in the Great Hall of the Institution of Civil Engineers sixteen Societies, among them The Institution of Gas Engineers, the Institute of Fuel, and the Association of Public Lighting Engineers, are combining in a Joint Meeting, organized by the Institution of Automobile Engineers, for the presentation and discussion of Papers on the "Essential Road Conditions Governing the Safety of Modern Traffic."

The subject will be treated from the three aspects of road planning, road construction, and road illumination. The meeting commences at 7 p.m., and cards of invitation to admit visitors may be obtained on application to the Institution of Automobile Engineers, 12, Hobart Place, S.W. 1.

South Metropolitan Company Co-operate in Food and Health Campaign

Monday last saw the inauguration of a series of ten weeks' Food and Health Demonstrations, arranged by the *Kentish Mercury*, with the support of the Ministry of Health and Food Marketing Boards. His Worship the Mayor of Bermondsey, Councillor A. M. Downing, J.P., inaugurated the Demonstration at the Thomas Richardson Memorial Hall, Rotherhithe, at 7.30 p.m., supported by some of the leading figures in the health services of the Borough.

In an endeavour to focus attention locally upon a national effort to improve physical standards, this paper arranged the series of Demonstrations with the help of cookery experts from certain of the Food Marketing Boards and the South Metropolitan Gas Company. The right kind of food to secure a balanced diet, giving the maximum of bodily and mental strength, and the best ways of preparing these foods for the table, are demonstrated at each of the two daily sessions.

The pursuit of such exercises as are calculated to keep a woman fit will also be explained at each demonstration in a display by members of the Women's League of Health and Beauty.

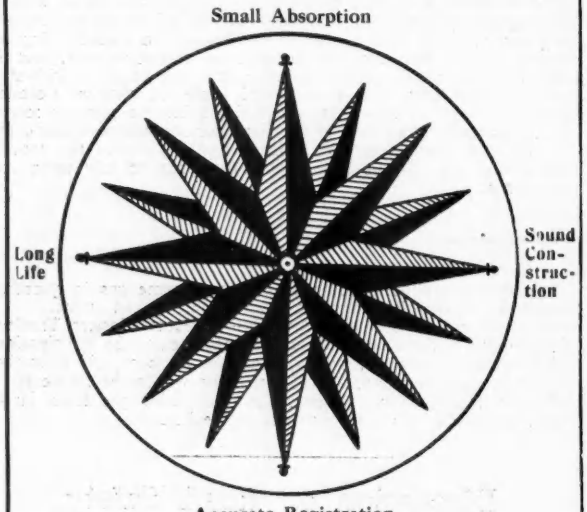
There will also be screened a selection of gas films showing the advantages of modern domestic improvements and the application of modern products.

One of the most interesting features of the Demonstrations will, of course, be the actual cooking displays and in the following weeks there will be printed in the *Kentish Mercury* the recipes employed in the Demonstrations by the experts giving them.

The following week's Demonstrations will be held at Blackheath, and will be opened on Monday evening, Feb. 21, by His Worship the Mayor of Greenwich, Councillor H. H. Gibbons, J.P. In this case the two daily sessions will continue during the week up to Friday night, Feb. 25.

Arrangements have been made or are pending for similar demonstrations in the following further centres: Eltham, Camberwell, Greenwich, Dulwich, Woolwich, Lewisham and Catford, Deptford, and Charlton.

All the Cardinal Points



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Markets and Manufactures

Current Sales of Gas Products

The London Market

Feb. 14.

The prices of Tar Products in the London market remain steady at the following levels:

Pitch, 38s. per ton f.o.b.
Creosote, 5¾d. to 6d.
Refined tar, 3¾d.
Pure toluole, 2s. 2d. to 2s. 3d.
Pure benzole, 1s. 8d.
95/160 solvent naphtha, 1s. 7d.
90/160 pyridine 10s. to 11s.
All per gallon naked at makers' works.

The Provinces

Feb. 14.

The average prices of gas-works products during the week were: Gas-works tar, 24s. to 29s. Pitch—East Coast, 38s. to 39s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 38s. to 39s.* Toluole, naked, North, 1s. 8d. to 1s. 9d. Coal tar, crude naphtha, in bulk, North, 8d. to 8½d. Solvent naphtha, naked, North, 1s. 5½d. to 1s. 6d. Heavy naphtha, North, 1s. 3d. to 1s. 3½d. Creosote, *ex* works, in bulk, North, liquid and salty, 5d. to 5½d.; low gravity, 4⅝d. to 4½d. Heavy oils, in bulk, North, 5d. to 5¼d. Carbolic acid 60's, 3s. 3d. to 3s. 6d. Naphthalene, £13 10s. to £16. Salts, 80s. to 85s., bags included. Anthracene, "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal; "B" quality unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Scotland

GLASGOW, *Feb.* 12.

There is still very little movement in this market, but quotations show practically no alteration during the week.

Crude gas-works tar.—Actual value is 37s. to 38s. per ton *ex* works in bulk.

Pitch is available in quantity at 28s. to 30s. per ton, f.o.b. for export, and round 28s. per ton *ex* works in bulk for home trade.

Refined tar.—Home price is unchanged at 3½d. to 4d. per gallon, and export value can be taken at 3d. to 3¼d. per gallon, both *ex* works in buyers' packages.

Creosote oil.—Substantial business has been placed during the week and prices are steady as follows:

Specification oil, 4¾d. to 5d. per gallon; low gravity, 6d. to 6¼d. per gallon; neutral oil, 5d. to 5¼d. per gallon, all *ex* works in bulk.

Cresylic acid is not commanding much attention and prices are approximately as follows: Pale, 97/99%, 2s. 9d. to 2s. 11d. per gallon; dark, 97/99%, 2s. 7d. to 2s. 9d.; and pale, 99/100%, 3s. to 3s. 9d. per gallon; according to quality, all *ex* works in buyers' packages.

Crude naphtha.—A ready outlet exists at 6d. to 6¼d. per gallon *ex* works in bulk, according to quality and district.

Solvent naphtha.—90/160 grade remains steady at 1s. 5¼d. to 1s. 6¼d. per gallon, and 90/190 heavy naphtha at 1s. 1d. to 1s. 2d. per gallon.

Motor benzole is valued at about 1s. 4¼d. per gallon.

Pyridine.—With supplies scarce prices are nominal at 12s. to 12s. 6d. per gallon for 90/160 grade, and 13s. to 14s. per gallon for 90/140 grade.

Benzole Prices

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole..	0	9½	to	0	10	per gall. at works
Motor „ ..	1	3	„	1	3½	„ „ „
90% „ ..	1	4	„	1	4½	„ „ „
Pure „ ..	1	8	„	1	8½	„ „ „

Contracts Advertised To-Day

Coal.
Bollington Gas Department. [p. 521.]
Chelmsford Gas Department. [p. 521.]
Clacton-on-Sea Gas Department. [p. 521.]
Prestatyn Gas Department. [p. 521.]

Cookers, Washing Machines, &c.
Lincoln Gas Department. [p. 522.]

General Stores.
Lincoln Gas Department. [p. 522.]

Mantles.
Lincoln Gas Department. [p. 522.]

Meters, &c.
Lincoln Gas Department. [p. 522.]

Oxide of Iron.
Lincoln Gas Department. [p. 522.]

Painting.
Stockport Gas Department. [p. 522.]

Pipes and Fittings.
Lincoln Gas Department. [p. 522.]

Applications for Patents

CANNON IRON FOUNDRIES, LTD., CLAYTON, R. T., AND BENTON, W. E.—Gas governors. No. 3065.

WOODALL-DUCKHAM (1920) LTD., AND TUFFIELD, R.—Heating systems for retorts. No. 2590.

Complete Specifications Accepted.

UNITED GAS INDUSTRIES, LTD., AND SIMPSON, S.—Dry gas meters. No. 479,035.

SUGG & CO., LTD., W., AND SUGG, P. C.—Gas Governors. No. 479,042.

RADIATION, LTD., YATES, H. J., AND BROOKS, G.W.—Gas burners. No. 478,767.

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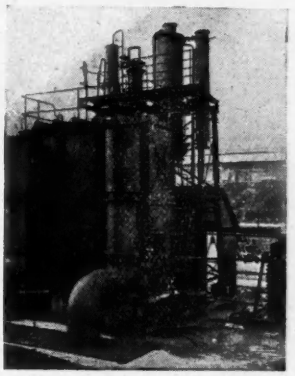
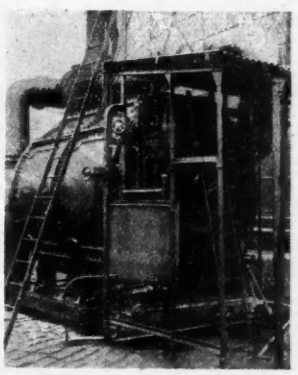


"Permac" Joints in a Gas Works.



"Permac" Joints in a Gas Works.

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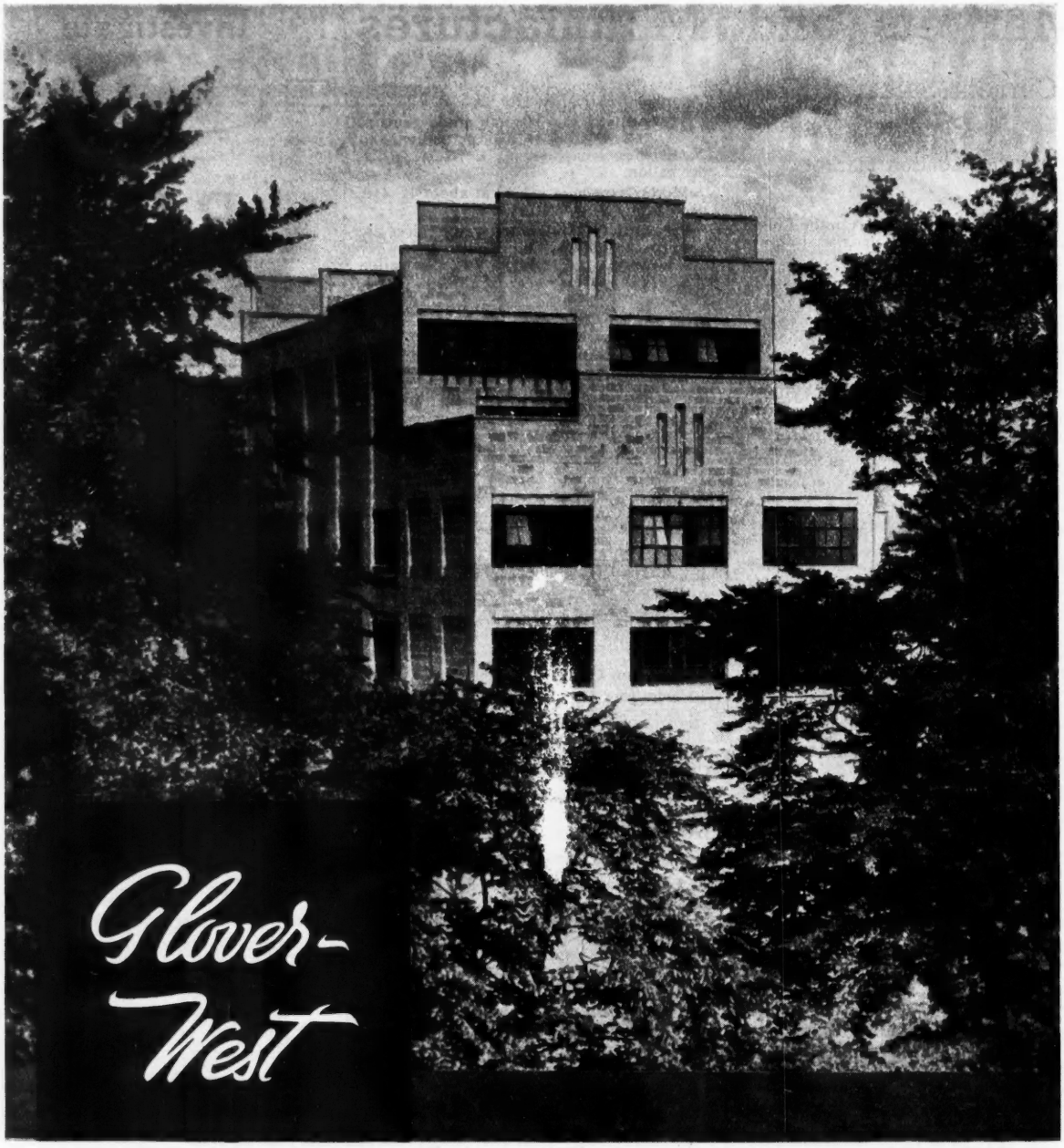

CONTINUOUS CARBONIZATION IN VERTICAL RETORTS

The illustration shows the Glover-West vertical retort house and coke grading plant built for the Buxton Corporation Gas Department, of typical modern exterior design.

415 plants
built or in construction in
24 countries

WEST'S GAS IMPROVEMENT CO. LTD.,
MANCHESTER: Albion Ironworks, Miles Platting ■ LONDON: Columbia House, Aldwych, W.C.2

GAS STOCKS AND SHARES

There was very little change in the conditions on the Stock Exchange last week, and with the uncertainty created by current international events the outlook for the current week does not appear very promising. Activity in gilt-edged stocks continued and prices closed in the majority of cases fractionally higher, though this section was not without a few reactions. Elsewhere business was quiet and quotations were marked down. Home rail dividend announcements were the principal feature. The Southern and Great Western increases gave an impetus to business in this section, Southern deferred closed 27s. 6d. higher at 21½, but the small addition to the L.M.S. disbursement was a disappointment and led to a fall of 4 points in the quotation.

The Gas Market was again well supported though with the exception of the *ex div.* markings of "ordinaries" prices closed unchanged.

Many more reports and accounts appeared during the week, and it is gratifying to note that in practically all cases increases in sales of gas are recorded while all dividends have been maintained at the previous year's rates. Among recent announcements appear the following:

——	1st Half.	2nd Half.	Year 1937.
	%	%	%
Barnet	3½	3½	7
Bristol	2½	2½	5
Cambridge 10 p.ct. max. ..	5	5	10
,, 7 p.ct. max. ..	3½	3½	7
,, 5 p.ct. max. ..	2½	2½	5
Cardiff	3	3	6
Chester	2½	3½	5¾
Croydon	3½	3½	7
East Hull	2½	2½	5
Hornsey	3	3	6
Northampton	2½	2½	5
Oxford	5	5	10
Preston "A"	5	5	10
,, "B"	3½	3½	7
Swindon	2½	2½	5
Uxbridge	3½	3½	7
Wakefield	2¼	4	6¼
Watford and St. Albans ..	3½	3½	7
Weston-super-Mare ..	2½	2½	5
Weymouth	3	3	6

Official Quotations on the London Stock Exchange

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Feb. 11.	Rise or Fall on Week.
1,767,439	Sept. 6	8	8	Alliance & Dublin Ord. ...	160—165	...
374,000	Dec. 13	4	4	Do. 4 p.c. Deb. ...	95—100	...
558,190	Nov. 15	5	5	Asscd. Gas & Water U'd'ts Ord.	18/6—20/6	...
500,000	,,	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	19/—21/-	...
216,041	,,	—	§-/4	Do 4 p.c. Red. Cum. Pref.	19/—20/-	...
278,590	,,	§-/2/5	4	Do. 4 p.c. Irred. Cum. Pref.	17/—19/-	...
500,000	Sept. 6	§35/-	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...
558,890	Aug. 9	7	7	Barnet Ord. 7 p.c.	158—163	...
300,000	Oct. 4	1/9⅓	1/4⅓	Bombay, Ltd.	26/—28/-	...
179,915	Aug. 9	9½	9½	Bournemouth sliding scale ...	200—205	...
590,407	,,	7	7	Do. 7 p.c. max. ...	158—163	...
493,960	,,	6	6	Do. 6 p.c. Pref. ...	133—138	...
50,000	Dec. 13	3	3	Do. 3 p.c. Deb. ...	78—83	...
262,025	,,	4	4	Do. 4 p.c. Deb. ...	98—103	...
335,000	,,	5	5	Do. 5 p.c. Deb. ...	115—120	...
357,900	Aug. 9	7½	7½	Brighton, &c., 6 p.c. Con. ...	150—155	...
649,955	,,	6½	6½	Do. 5 p.c. Con. ...	133—138	...
205,500	,,	6	6	Do. 6 p.c. 'B' Pref.	127—133	...
855,000	Sept. 20	8	7	British Ord.	140—145	...
100,000	Dec. 13	7	7	Do. 7 p.c. Pref.	140—145	...
350,000	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...
120,000	,,	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...
450,000	,,	5	5	Do. 5 p.c. Red. Deb. ...	102—107	...
450,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...
100,000	22 May'33	6	4	Cape Town, Ltd.	1½—2½	...
100,000	6 Nov.'33	4½	4½	Do. 4½ p.c. Pref. ...	1½—3½	...
150,000	Dec. 13	4½	4½	Do. 4½ p.c. Deb. ...	70—75	...
626,860	Feb. 7	6	6	Cardiff Con. Ord.	123—128*	−2
237,860	Dec. 13	5	5	Do. 5 p.c. Red. Deb.	106—111	...
98,936	Oct. 4	2/-	2/-	Colombo Ord....	1⅝—1⅞	...
24,510	,,	1/4⅛	1/4⅛	Do. 7 p.c. Pref. ...	23/6—25/6	...
739,453	Oct. 4	-/11·48	-/11·48	Colonial Gas Assn. Ltd. Ord.	17/—19/-	...
296,144	,,	1/3·30	1/3·30	Do. 8 p.c. Pref.	22/—24/-	...
1,775,005	Feb. 7	5	5	Commercial Ord.	83—88*	−2
620,000	Nov. 29	3	3	Do. 3 p.c. Deb. ...	73—78	...
286,344	Feb. 7	5	5	Do. 5 p.c. Deb. ...	113—118*	−2
807,560	Aug. 9	7	7	Croydon sliding scale... ...	140—145	...
644,590	,,	5	5	Do max. div.	110—113	...
620,385	Dec. 13	5	5	Do. 5 p.c. Deb. ...	115—120	...
239,000	Feb. 7	5	5	East Hull Ord. 5 p.c.... ...	96—101*	−2
185,355	Aug. 9	6	6	East Surrey Ord. 5 p.c. ...	120—125	...
176,211	Dec. 13	5	5	Do. 5 p.c. Deb. ...	112—117	...
250,000	Nov. 15	7	4	Gas Consolidation Ord. ...	19/6—21/6	...
250,000	,,	4	4	Do. 4 p.c. Red. Cum. Pref.	18/6—20/6	...
19,223,324	Feb. 7	5⅔	5⅔	Gas Light & Coke Ord. ...	23/6-24, 6a*	−/6
2,600,000	,,	3½	3½	Do. 3½ p.c. max. ...	83—86*	−1
4,477,106	,,	4	4	Do. 4 p.c. Con. Pref ...	99—102*	−1
2,993,000	Jan. 17	...	3¾	Do. 3¾ p.c. Red. Pref.	101—103*	...
8,602,497	Nov. 29	3	3	Do. 3 p.c. Con. Deb. ...	81—84	...
3,642,770	,,	5	5	Do. 5 p.c. Red. Deb. ...	113—116	+1
3,500,000	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	111—114	+1
700,000	Sept. 6	3½	3½	Do. 3½ p.c. Red. Deb. ...	98—101	...
270,466	Aug. 23	6	6	Harrogate New Cons. ...	115—120	...
157,500	April 5	1/2⅜	1/2⅜	Hong Kong and China Ord	¾—1	...
213,200	Feb. 7	6	6	Hornsey Con. 3½ p.c. ...	116—121*	−2
5,600,000	Nov. 1	12	8	Imperial Continental Cap. ...	125—130	−2
223,130	Jan. 17	3½	3½	Do. 3½ p.c. Red. Deb. ...	88—93*	...
285,242	Aug. 9	8½	8½	Lea Bridge 5 p.c. Ord. ...	170—175	...
11,751	Aug. 23	10	8	Maidstone 5 p.c. Cap.... ...	180—190	...
63,480	Dec. 13	3	3	Do. 3 p.c. Deb. ...	70—75	...
75,000	Nov. 29	†10	†10	Malta & Mediterranean ...	145—155	...
				Metropolitan (of Melbourne)		
392,000	Oct. 1	5½	5½	5½ p.c. Red. Deb.	100—103	...
231,977	Aug. 23	5	5	M.S. Utility 'C' Cons. ...	101—106	...
968,658	,,	4	4	Do. 4 p.c. Cons. Pref.	196—101	...
360,075	Dec. 13	4	4	M.S. Utility 4 p.c. Deb. ...	97—102	...
148,955	,,	5	5	Do. 5 p.c. Deb. ...	113—118	...
675,000	Nov. 15	†9	†6	Montevideo, Ltd.	78—83	−4
250,000	Aug. 9	7½	7½	North Middlesex 6 p.c. Con.	147—152	...
396,160	Feb. 7	5	5	Northampton 5 p.c. max. ...	108—113*	−2
300,000	Oct. 18	†7	†9	Oriental, Ltd.	153—158	...
468,537	Dec. 13	8	8	Plymouth & Stonehouse 5 p.c.	154—159	...
621,667	Feb. 7	8½	8½	Portsmouth & Gosport Cons.	161—166*	−3
241,446	,,	5	5	Do. 5 p.c. max. ...	102—107*	−2
73,350	,,	5	5	Do. 5 p.c. Pref. ...	108—113*	−2
247,966	Dec. 13	4	4	Primitiva 4 p.c. Cons. Deb. ...	98—103	...
625,959	Jan. 17	4	4	Do. 4 p.c. Red. Deb. ...	95—100*	...
15,000	Sept. 6	6	6	San Paulo 6 p.c. Cum. Pref. ...	9—9½	...
441,275	Sept. 20	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	21/6—23/6	...
460,810	,,	,,	-/10⅝	,, ,, 4½ p.c. Cum. Pref.	19/6—21/6	...
133,201	Feb. 7	8½	5	Shrewsbury 5 p.c. Ord. ...	128—133*	−2
9,000	June 7	4	4	South African Ord.	3¾—4¼	...
1,371,752	Sept. 6	1/2⅞	1/2⅝	South East'n Gas Cn. Ld. Ord.	23/—25/-	...
871,636	,,	,,	-/10⅝	Do. 4½ p.c. Red. Cum. Pref.	20/—22/-	...
498,818	,,	4	4	Do. 4 p.c. Cum. Pref. ...	18/—20/-	...
450,000	Feb. 7	4	4	Do. 4 p.c. D'b.	98—101*	−1
150,000	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—98*	−1
6,709,895	Feb. 7	6	5	South Met. Ord.	106—109*	−1
1,135,812	,,	6	6	Do. 6 p.c. Irred. Pf. ...	129—134*	−2
850,000	,,	4	4	Do. 4 p.c. Irred. Pf. ...	97—100*	−1
1,895,445	Dec. 13	3	3	Do. 3 p.c. Deb. ...	74—79	...
1,000,000	Jan. 17	5	5	Do. 5 p.c. Red. Deb....	109—112*	...
1,543,795	Feb. 7	6	6	South Suburban Ord. 5 p.c. ...	118—123*	−2
512,825	,,	5	5	Do. 5 p.c. Pref....	108—113*	−2
500,000	,,	4	4	Do. 4 p.c. Pref....	95—100*	...
250,000	,,	§18/9	3⅜	Do. 3⅜ p.c. Red. Pref.	97—103*	−2
888,587	Dec. 13	5	5	Do. 5 p.c. Deb....	115—120	...
250,000	,,	4	4	Do. 4 p.c. Deb....	97—100	...
200,000	Sept. 20	...	3½	Do. 3½ p.c. Red. Deb.	94—99	...
427,859	Nov. 1	1/2⅞	9†	S. Western Gas & Water Ord.	18/6—20/6	...
160,523	,,	-/10⅛	-/10⅛	Do. 4½ p.c. Red. Cum. Pf.	19/6—21/6	...
110,000	Dec. 13	4	4	Do. 4 p.c. Red. Deb. ...	97—102	...
750,541	Feb. 7	5	5⅛	Southampton Ord. 5 p.c. ...	109—114*	−2
148,836	Dec. 13	4	4	Do. 4 p.c. Deb.	96—101	...
350,000	Feb. 7	5⅛	5⅛	Swansea 5½ p.c. Red. Pref. ...	108—113*	−2
94,000	Jan. 3	3⅛	3⅛	Do. 3⅛ p.c. Red. Deb. ...	95—100*	...
1,076,490	Feb. 7	6⅛	6⅛	Tottenham and District Ord.	130—135*	−2
409,835	,,	5⅛	5⅛	Do. 5⅛ p.c. Pref....	119—124*	−2
62,235	,,	5	5	Do. 5 p.c. Pref....	108—113*	−1
371,850	Dec. 13	4	4	Do. 4 p.c. Deb....	97—102	...
85,701	July 19	‡6	6	Tuscan 6 p.c. Red. Deb. ...	96—101	...
888,629	Oct. 4	6	4	U. Kingdom Gas Cor. Ord....	19/—21/-	...
937,743	Nov. 15	4½	4½	Do. 4½ p.c. 1st Cum. Pref.	20/—22/-	...
500,000	,,	...	-/1·15	Do. 4 p.c. 1st Red. Cum. Pf.	19/—21/-	...
745,263	Dec. 13	4½	4½	Do. 4½ p.c. 2nd Non-Cum.Pf.	16/6—18/6	...
1,000,000	Sept. 20	3½	3½	Do. 3½ p.c. Red. Deb. ...	96—99	...
373,939	Feb. 7	7	7	Uxbridge, &c., 5 p.c.	136—141*	...
133,010	,,	5	5	Do. 5 p.c. Pref. ...	108—113*	−1
1,371,138	Feb. 7	7	7	Wandsworth Consolidated ...	138—143*	−2
2,525,768	,,	4	4	Do. 4 p.c. Pref. ...	96—101*	−2
1,343,964	Dec. 13	5	5	Do. 5 p.c. Deb. ...	115—120	...
383,745	,,	4	4	Do. 4 p.c. Deb. ...	97—102	...
558,342	Feb. 7	7	7	Watford and St. Albans Ord.	138—143*	−2
200,000	,,	5	5	Do. 5 p.c. Pref. ...	108—113*	−1
200,000	,,	5½	5½	Do. 5½ p.c Pref. ...	119—124*	−2
200,000	Nov. 29	4	4	Do. 4 p.c. Red. Deb.	95—100	...
100,000	,,	3½	3½	Do. 3½ p.c. Red. Deb.	94—99	...

a.—The quotation is per £1 of stock. * Ex. div. † Paid free of income-tax ‡ For year. § Actual.

Supplementary List and Provincial Exchanges overleaf.

STOCK AND SHARE LIST—Cont.

Supplementary List, not Officially Quoted, London

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Feb. 11.	Rise or Fall on Week.
202,152	Sept. 6	25/–b	5	Ascot Ord.	100—105	...
128,182	Dec. 13	5	5	Do. 5 p.c. Pref.	108—113	...
31,035	Aug. 23	...	-/4½	Associated Utilities 4 p.c. Pref.	16/6—18/6	...
100,000	Dec. 13	...	3½	Do. 3½ p.c. Red. Deb....	95—100	...
17,000	Aug. 3	8	8	Bognor Orig. Ord. 'A' ...	160—170	...
62,210	,,	8	8	Do. New Addl. 'A' ...	160—170	...
87,160	,,	7	7	Do. New 7 p.c. max. ...	141—146	...
37,440	Feb. 7	10	10	Cam. Univ. & Town10 p.c. max.	190—200*	−3
125,970	,,	7	7	Do. 7 p.c. max.	135—140*	...
39,025	,,	5	5	Do. 5 p.c. max.	97—102*	−1
96,410	Feb. 7	4½	4½	Cardiff 4½ p.c. Pref.	95—100*	−2
150,000	Aug. 9	4	4	Croydon 4 p.c. Pref.	97—101	...
130,000	Dec. 13	4	4	Do. 4 p.c. Deb.	97—102	...
65,000	Aug. 9	8½	7½	Eastbourne 'A' 5 p.c. ...	158—163	...
198,000	,,	7	6	Do. 'B' 3½ p.c.	128—133	...
112,312	,,	5	5	Do. 5 p.c. Pref.	108—113	...
130,000	Dec. 13	5	5	Do. 5 p.c. Deb.	113—118	...
24,000	Aug. 23	8½	8½	Great Yarmouth 8½ p.c. max.	44—49	...
59,400	,,	7½	7½	Do. 7½ p.c. max.	34—39	...
51,160	Dec. 13	5½	5½	Do. 5½ p.c. Deb.	120—125	...
152,600	Sept. 6	9	8	Guildford Cons.	170—175	...
54,055	,,	5	5	Do. 5 p.c. Pref.	110—115	...
68,250	Dec. 13	5	5	Do. 5 p.c. Deb.	112—117	...
156,600	Aug. 23	7½	7½	Hampton Court Cons. ...	145—155	...
80,000	Aug. 9	4	4	Lea Bridge 4 p.c. Pref ...	95—100	...
60,000	,,	6	6	Do. 6 p.c. Pref. ...	125—130	...
94,876	Dec. 13	4	4	Do. 4 p.c. Deb. ...	97—100	...
73,620	Sept. 6	8½	8½	Luton Cons. 'A'	163—168	...
107,960	Sept. 20	5½	4	Mid Kent Ord.	8¾—9¾	...
230,940	Feb. 7	10	10	Oxford & District Ord. ...	202—207*	−3
47,112	,,	5	5	Do. 5 p.c. Pref.	106—111*	−2
50,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	108—113*	−2
126,193	Nov. 15	7½	7½	Peterborough Ord.	158—163	...
64,990	Sept. 6	7½	6½	Redditch Ord....	125—135	...
166,850	Feb. 7	8	8	Romford Ord....	148—153*	−7
60,000	,,	4	4	Do. 4 p.c. Pref.	97—100*	...
44,000	Sept. 20	5	5	Do. 5 p.c. Deb.	113—118	...
25,570	Feb. 7	5½	5½	Rugby 5½ p.c. Pref.	123—128*	−2
25,000	,,	6	6	Do. 6 p.c. Red. Pref. ...	103—108*	−3
42,750	Dec. 13	5½	5½	Do. 5½ p.c. Deb.	120—125	...
10,950	Aug. 23	8	8	Ryde Ord.	158—163	...
270,086	Sept. 6	7	7	Slough Ord.	133—138	...
21,000	Dec. 13	5	5	Do. 5 p.c. Deb.	110—115	...
28,872	Nov. 1	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	19/—21/–	...
28,866	Sept. 6	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	18/6—20/6	...
137,730	Aug. 9	7	7	Southgate & Dist. 7 p.c. max.	140—145	...
62,500	,,	5	5	Do. 5 p.c. Pref.	110—115	...
117,228	Feb. 7	5	5	Swindon Cons.	104—109*	−2
60,425	Dec. 13	5	5	Do. 5 p.c. Deb.	110—115	...
64,380	Dec. 13	5	5	Torquay and Paignton 5 p.c. Pf.	108—113	...
33,858	Nov. 15	...	-/2·70c	United Kingdom Gas Corpn. 4½ p.c. 1st Cum. Pref. ...	20/—22/–	...
130,000	Feb. 7	5	8	Wakefield Ord.	118—123*	−2
81,650	,,	5	5	Do. 5 p.c. max.	101—106*	−2
82,000	Feb. 7	6	6	Weymouth Ord.	101—106*	−2
98,384	Feb. 7	6	6	Wolverhampton 6 p.c. Pref....	118—123*	−2
160,000	Dec. 13	5½	5½	Do. 5½ p.c. Rd. Db.	107—112	...
90,000	Dec. 13	5	5	York 5 p.c. Red. Deb.... ...	104—109	...
133,640	July 19	6½	6½	Yorktown (Cam.) 5 p.c. Cons.	128—133	...
120,000	,,	5	5	Do. 5 p.c. Pref.	108—113	...
35,000	Dec. 13	5½	5½	Do. 5½ p.c. Deb.	121—126	...

BRISTOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, Feb. 11.	Rise or Fall on Week.
347,756	Feb. 7	5	6	Bath Cons.	118—120*	−2
1,667,250	Feb. 7	5	5	Bristol, 5 p.c. max.	117—118*	−½
120,420	Dec. 13	4	4	Do. 1st 4 p.c. Deb. ...	100—102	...
217,870	,,	4	4	Do. 2nd 4 p.c. Deb. ...	100—102	...
328,790	,,	5	5	Do. 5 p.c. Deb.	119—122	...
274,000	July 19	5	5	Newport (Mon.) 5 p.c. max....	100—102	...
13,200	Sept. 6	8	7	Pontyp'l Gas & W. 10 p.c. 'A'	13—14	...
13,600	,,	6	5	Do. 7 p.c. 'B'	11⅞—12⅜	...
40,000	,,	6	5	Do. 7 p.c. 'C'	11⅞—12⅜	...
140,778	Feb. 7	5	5	Weston-super-Mare Cons. ...	108—110*	−2
64,338	Jan. 3	4	4	Do. 4 p.c. Deb.	94½—96½	...
33,340	,,	7½	7½	Do. 7½ p.c. Deb.	154—157	...

LIVERPOOL EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, Feb. 11.	Rise or Fall on Week.
157,150	Feb. 7	5	6½	Chester 5 p.c. Ord.	103½—107½*	—
92,500	Dec. 13	4	4	Do. 4 p.c. Pref.	96—100	...
36,430	,,	3½	3½	Do. 3½ p.c. Deb.	88—91	...
41,890	,,	4	4	Do. 4 p.c. Red. Deb. ...	97—101	...
2,167,410	Aug. 25	6	6	Liverpool 5 p.c. Ord.... ...	125—126	−1
245,500	Dec. 13	5	5	Do. 5 p.c. Red. Pref. ...	99—104	...
306,083	Jan. 17	4	4	Do. 4 p.c. Deb. ...	100—102*	...
106,280	Feb. 7	10	10	Preston 'A' 10 p.c.	202—212*	−4
188,219	,,	7	7	Do. 'B' 7 p.c.	144—154*	—

NEWCASTLE EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, Feb. 11.	Rise or Fall on Week.
122,577	Aug. 9	8	8	Blyth 5 p.c. Ord.	165—166	...
732,000	Aug. 9	5	5	Hartlepool G. & W. Cn. & New	112—114	...
2,061,315	Feb. 7	5	5⅞	Newcastle & Gateshead Con.	23/—23/6d*	—
682,856	,,	4	4	Do. 4 p.c. Pref. ...	97½—98½*	—
776,706	Jan. 3	3½	3½	Do. 3½ p.c. Deb. ...	89½—90½	...
277,285	Nov. 1	5	5	Do. 5 p.c. Deb. '43...	103—105	...
332,351	Feb. 7	6	6	Sunderland 6 p.c. max. ...	137—139*	—

NOTTINGHAM EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, Feb. 11.	Rise or Fall on Week.
542,270	Aug. 9	9	6	Derby Con.	135—145	...
55,000	Dec. 13	4	4	Do. 4 p.c. Deb.	100—105	...
20,000	Dec. 13	5	5	Long Eaton 5 p.c. Pref. ...	10—12	...
80,000	,,	5	5	Do. 5 p.c. Deb. ...	105—110	...

SHEFFIELD EXCHANGE

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, Feb. 11.	Rise or Fall on Week.
10,000	Sept. 20	10	10	Great Grimsby 'A' Ord. ...	210—220	...
6,500	,,	10	10	Do. 'B' Ord. ...	210—220	...
79,000	,,	10	10	Do. 'C' Ord. ...	205—210	...
1,806,339	Aug. 23	6	6½	Sheffield Cons.	144—148	...
95,000	Jan. 3	4	4	Do. 4 p.c. Deb.	100—103	...

a The quotation is per £1 of Stock. § Actual for Quarter. c Actual. * Ex div.

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1938

ota ns, 11.	Rise or Fall on Week.
120*	−2
118*	−⅛
102	...
102	...
122	...
102	...
14	...
12⅜	...
12⅜	...
110*	−2
96½	...
157	...
107½*	—
100	...
91	...
101	...
126	−½
104	...
102*	...
212*	−4
154*	—
166	...
114	...
3/6a*	—
98½*	—
90½	...
105	...
139*	—
145	...
105	...
12	...
110	...
220	...
220	...
210	...
148	...
103	...

* Ex div.

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London.